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Trends in Government Healthcare Budgets in Delta State, Nigeria, from 2018 to 2024: Implications for Universal Health Coverage

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Abstract

Background: Effective healthcare financing is crucial for Universal Health Coverage (UHC). Delta State's UHC efforts face funding and allocation challenges. This study analyses its healthcare budgeting from 2018 to 2024.

Methods: It is a mixed-methods analysis of Delta State's healthcare budget from 2018 to 2024, combined with extracts from a rapid qualitative assessment of residents' perceptions of executed healthcare projects and programmes relevant to UHC and SDG-3.

Results: The healthcare budget increased by 152%, from ₦18.96 billion (2018) to ₦47.84 billion (2024), but remained below 5% of the state's GDP of ₦4.05 – ₦4.87 trillion. It was less than 10% of the state's budget, peaking at 9.13% in 2020, below Abuja Declaration's 15% target. Personnel costs dominated the budget, capital expenditure rose post-2020, and overhead costs remained under 5%. Investment in the Delta State Contributory Health Commission dropped by 83%, while COVID-19 funding spiked to ₦2 billion in 2020. Infrastructure and equipment constituted most capital expenditure, peaking at 89.78% of the Total Health Expenditure in 2023. Overhead expenses varied, with hospitals seeing a 2,047% increase from ₦45 million in 2018 to ₦971 million in 2024. There was a focus on infrastructure and emergency responses, particularly during COVID-19, but these were not matched with sustainable funding strategies. Residents largely reported poor infrastructure and a lack of visible healthcare projects and interventions, indicating gaps between policy intent and community experience.

Conclusion: To achieve UHC and health equity, Delta State must commit to increased and sustained healthcare financing, equitable resource distribution, and enhanced administration.

Keywords: Budget Analysis, Delta State Nigeria, Government Healthcare financing, Health Policy, Health Equity, SDG-3, Universal Health Coverage

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INTRODUCTION

Healthcare financing is fundamental to delivering effective and equitable healthcare, which is integral to achieving Universal Health Coverage (UHC) and improving population health outcomes.[1, 2] Adequate funding promotes access to quality care, preventive services, and reduced health disparities. However, many low- and middle-income countries (LMICs), including Nigeria, face challenges such as insufficient funding, inefficient resource allocation, and inequitable access to care.[2, 3] A retrospective analysis of India's National Health Policy (2017–2022) revealed an increase in public health expenditure from 0.9% to 1.6% of GDP, still below the target of 2.5%, a pattern common in LMICs, resulting in high out-of-pocket (OOP) expenses that hinder progress towards UHC.[3] Achieving quality healthcare requires aligning political, social, economic, and health factors within robust systems focused on efficiency and equity.[4, 5] Effective pooling methods, such as insurance schemes and harmonised funding sources, reduce financial risks, while strategic purchasing maximises healthcare efficiency.[6] For instance, Thailand's mix of passive and closed-ended payment systems showed cost savings with the latter.[7] These mechanisms aim to enhance access, affordability, and equity, key objectives for achieving UHC.[8]

African healthcare systems, including Nigeria's, contend with historical underfunding and prioritisation challenges. For example, Osofosu-Amaah [9] noted that preventive care received only 12% of health allocations, while curative services dominated (80%). Recent efforts to achieve UHC in African nations, including Nigeria, emphasise national dialogues and testing of health insurance frameworks.[10] Addressing funding constraints and increasing prepaid funding pools can improve healthcare outcomes. Despite Nigeria's diverse funding sources, such as government allocations, OOP payments, donor contributions, and insurance schemes, financial constraints contribute to poor infrastructure, an inadequate workforce, and limited service access.[11, 12] These issues are exacerbated at the sub-national level, where state governments are primarily responsible for healthcare delivery.

Healthcare financing challenges in Delta State, Nigeria, reflect broader national issues. Previous studies showed that high OOP spending constitutes approximately 98% of healthcare payments in tertiary facilities, disproportionately affecting the poor and limiting access to quality care.[11, 13] The Delta State Contributory Health Scheme (DSCHS), introduced in 2016 to provide affordable healthcare, also faces awareness and utilisation barriers. Among teachers in Delta-South Senatorial District, 99.7% were aware of DSCHS, but only 36% had good knowledge of it, and 69.4% had utilised the scheme within the past year.[14] Similarly, the National Health Insurance Scheme (NHIS) [Now National Health Insurance Authority (NHIA)] has only achieved between 5%-10% coverage nationwide, despite utilisation among Delta State healthcare professionals.[15, 16]

According to Antohi et al.,[17] COVID-19 highlighted vulnerabilities in health budgets, emphasising efficient resource allocation to mitigate challenges. Fraser-Hurt et al.,[18] demonstrated that optimising UHC intervention spending could avert up to 26% of disability-adjusted life years (DALYs), highlighting the transformative potential of strategic healthcare financing. Meanwhile, healthcare in Delta State is primarily driven by user fees. While intended to improve efficiency and quality, user fees deter utilisation, particularly among disadvantaged populations, and encourage patients to patronise the more affordable but likely less safe traditional healers.[13, 19, 20] Financial challenges in Delta State underscore the urgent need for improved healthcare financing mechanisms and equitable resource allocation.[12, 21] Delta State also confronts specific healthcare issues, such as infectious diseases, maternal and child health concerns, and environmental risks, in addition to regional and global shocks like the COVID-19 pandemic. Inefficient funding and intervention strategies exacerbate these challenges.[22]

Although studies from other regions provide frameworks for resource allocation, recent data on Delta State's healthcare financing is lacking. This study aims to address the critical gaps in understanding healthcare financing in Delta State, Nigeria, which is a crucial aspect of achieving UHC. It provides valuable insights into the allocation and utilisation of healthcare resources, which is essential for effective healthcare planning and policy formulation.[1, 2, 23]

This study utilised secondary data to critically analyse government healthcare financing in Delta State, Nigeria, over seven years (2018-2024). It analysed the trends in government budget allocation for healthcare in Delta State from 2018 to 2024, it looked at the sustainability of

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the state insurance scheme, and utilised a qualitative interview to briefly assess residents' perception of the government healthcare projects and interventions.

METHODOLOGY

Research Design

This study adopted a mixed-methods design[24, 25] which involved cross-sectional qualitative interviews and a secondary data analysis of seven years of healthcare budgetary patterns in Delta State, Nigeria.

Research Setting and Population

Delta state spans over a land space of about 16,986 km^2, and has an estimated population of 5,636,100 in 2022.[26] The state comprises 25 Local Government Areas distributed across three senatorial districts: Delta North (9 LGAs), Delta Central (8 LGAs), and Delta South (8 LGAs). It serves as the point of intersection between the local and federal governments, running on an annual budget and controlling about 510 public and private health facilities scattered across the state.

Qualitative interviews targeted two randomly selected LGAs per senatorial district: Ika South, Ndokwa West, Ethiope East, Sapele, Warri South, and Isoko North. Participants were conveniently selected based on their knowledge of or significant exposure to local healthcare services. Participant selection continued until data saturation was reached at 23 participants: Ika South (6), Warri South (5), Ndokwa West (5), Isoko North (4) and Sapele (3).

Inclusion and Exclusion Criteria

To ensure reliable retrospective healthcare data from adulthood, adults aged 25 and above to ensure that events reported within the past seven years fall within memories formed during adulthood (18 and above). To ensure valid and sufficient knowledge and experience, only persons who had resided in the state for over five years were included. Individuals with mental incapacities and those who were non-consenting were excluded. Participation was voluntary within the specified group.

Instrument for Data Collection and Analysis

Secondary data from the budgetary files and resources were inspected for accuracy, extracted into a Microsoft Excel spreadsheet and SPSS, and analysed. Data was extracted using a pre-organized template comprising of Personnel Costs (PC), Overhead (OH), and Capital Expenditure broken into Administrative Costs (AC), Disaster Preparedness and Response (DPR), Health Insurance and Subsidies (HIS), Human Resources Infrastructures (HRI), Healthcare Infrastructure and Equipment (HIE), Public Health Interventions (PHI), Pharmaceuticals and Medical Supplies (PMS), Research and Development (RD), and Others.

*The Qualitative Interview*s were conducted using a researcher-developed pre-tested set of questions focusing on payment methods, understanding of health insurance, awareness of projects and programs, healthcare access, satisfaction with the facility, and systemic challenges. This article only reports the awareness about government projects and programs and opinions about healthcare infrastructures. The qualitative interview tool underwent two rounds of pre-testing. The first involved interviews with five consenting informally selected adults from a public space in Edo State. This process was documented and reviewed to improve content and face validity. It involved a review of questions for proper wording and flow, as well as improvements to the document formatting to enhance clarity and readability for the interviewers. The second test engaged two postgraduate medical and public health educators. All the responses were thematically analysed by two qualitative experts using inter-rater reliability analysis via coding comparison query on Nvivo to achieve a Cohen's Kappa (κ) of 0.91 for inter-rater/coder reliability. Feedback from these stages informed further refinement of the tool, especially the final addition of interviewer guide notes.

Data Sources and Collection

Between February and December 2024, the State budgets from 2018-2024 were sourced from official records and authenticated databases. Publicly available secondary data were utilised, adhering to citation and acknowledgement standards. Where data were unavailable in public repositories or considered unreliable, the Ministry of Health assisted in sourcing information. All sources were meticulously reviewed for accuracy before and after analysis and presentation.

For the qualitative component, key informant interviews were conducted concurrently with the other components (quantitative survey) of the project from March 1st to June 6th, 2024. Interviews were audio-recorded with

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participants' written consent and conducted in formal or pidgin English, eliminating the need for interpreters.

Data Analysis

Data was extracted from the crude budget documents and mapped into various budgetary components using Excel spreadsheets. The figures were double-checked against the Ministry's source files by two team members in at least two rounds of careful table reviews over four weeks. A simple analysis was then applied to each verified dataset to evaluate trends in healthcare budgeting with respect to state income and population size. Descriptive analysis examined budget allocations, insurance investments, and healthcare projects, assessing alignment with Universal Health Coverage goals under SDG-3. Qualitative data were analysed thematically in NVivo, yielding seven main themes and nine subthemes, with 29 codes focused on healthcare financing, quality, and insurance attitudes.

RESULTS

Below is a quantitative analysis of secondary data on Delta State budgets and expenditures over the past seven years (2018-2024), along with inferences drawn from the qualitative analysis of interviews with 23 participants.

Sociodemographic Findings

Table 1: Sociodemographic Attributes of Participants

Sociodemographic Attributes		Qualitative (N = 23)	Percentage
Education	Secondary/High school or below	3	13.04
	OND/Diploma	7	30.43
	HND/Bachelor's degrees	13	56.52
	Masters/Postgraduate	0	0.00
	PhD/Fellowships	0	0.00
Age	25 - 34 years	15	65.22
	35 - 44 years	3	13.04
	45 - 54 years	2	8.70
	55 - 64 years	2	8.70
	65 years and above	1	4.35
Local Government Area (LGA)	Warri South	5	21.74
	Ndokwa West	5	21.74
	Ethiope East	0	0.00
	Sapele	3	13.04
	Ika South	6	26.09
	Isoko North	4	17.39
Employment	Employed Full-time	19	82.61
	Employed Part-time	2	8.70
	Unemployed	2	8.70
Marital Status	Single	12	52.17
	Married	11	47.83
	Divorced/Separated	0	0.00
	Widowed	0	0.00
Family Size	1-3	3	13.04
	4-6	17	73.91
	7 and above	3	13.04
Monthly Income (Naira)	Less than 30,000	4	17.39
	30,000 to 100,000	10	43.48
	100,000 to 250,000	6	26.09
	250,000 to 500,000	2	8.70
	More than 500,000	1	4.35
Gender	Male	12	52.17
	Female	11	47.83

Source: Survey Data.

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Trends in Government Healthcare Budget

Table 2: Summary of Delta State GDP, Total Budgets, and Health Budget with its percentage values

Year	GDP	Total budget	State's population	Health budget % of the total budget	Health budget	Health budget % of GDP
2018	4,050,000,000,000	308,888,558,898	6,037,463	6.14%	18,963,642,734.00	0.47%
2019	4,187,500,000,000	390,378,671,178	6,202,890	5.84%	22,784,416,097.00	0.54%
2020	4,325,000,000,000	282,331,896,385	6,372,849	9.13%	25,784,857,823.76	0.60%
2021	4,462,500,000,000	383,954,597,889	6,547,465	5.90%	22,655,265,279.00	0.51%
2022	4,600,000,000,000	478,941,810,912	6,726,866	5.52%	26,455,484,201.00	0.58%
2023	4,737,500,000,000	571,636,910,991	6,911,182	5.36%	30,611,851,128.00	0.65%
2024	4,875,000,000,000	724,979,313,867	7,100,548	6.60%	47,836,469,411.00	0.98%

Table 2 shows values calculated from the official data for 2018 and 2022 [27] shows Gross Domestic Product (GDP) of 4.050 trillion in 2018 and 4.6 trillion in 2022, an increase of 500 billion in 4 years or an average of 137.5 billion per year, assuming steady growth. This was used to estimate subsequent years without accounting for correction factors, such as the COVID-19 pandemic. The population was also calculated from official 2018 figures of 6,037,463 and an estimated annual growth rate of 2.74.[28] As the population grew, the annual health budget also increased from 18 billion to 47 billion.

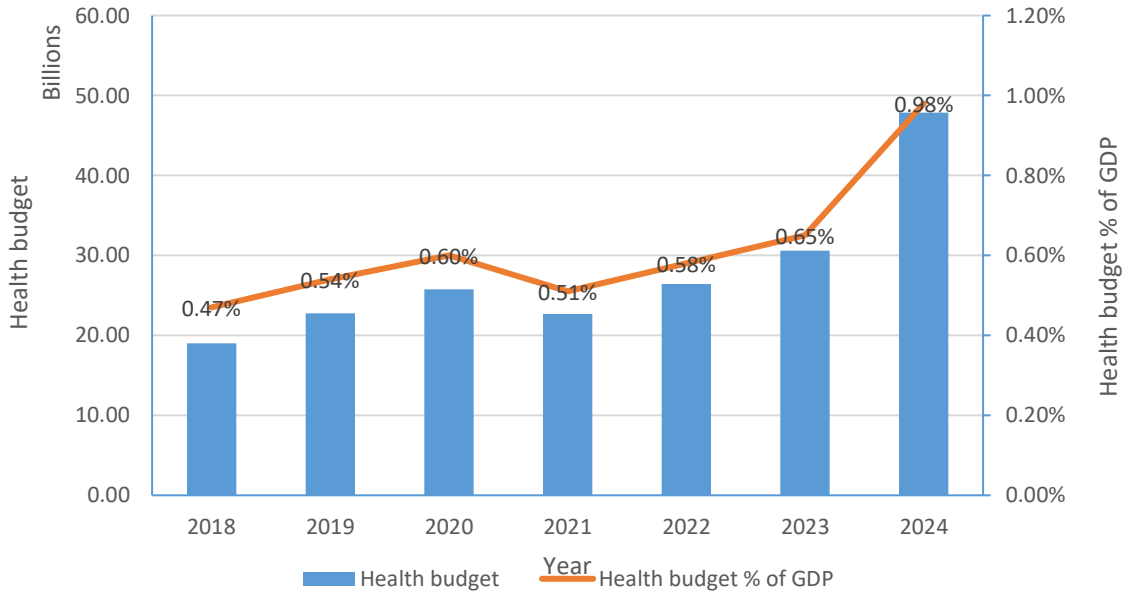

Figure 1: Comparative trends of health budget and its percentage of GDP from 2018 to 2024 in Delta State, Nigeria.

The State's healthcare budget increased steadily in absolute terms (Figure 1), rising from 18.96 billion in 2018 to 47.84 billion in 2024, representing a 152% increase over the 7 years. However, when expressed as a percentage of the state's GDP, healthcare spending remained consistently below the globally recommended threshold of 5%, ranging from 0.47% in 2018 to 0.98% in 2024.

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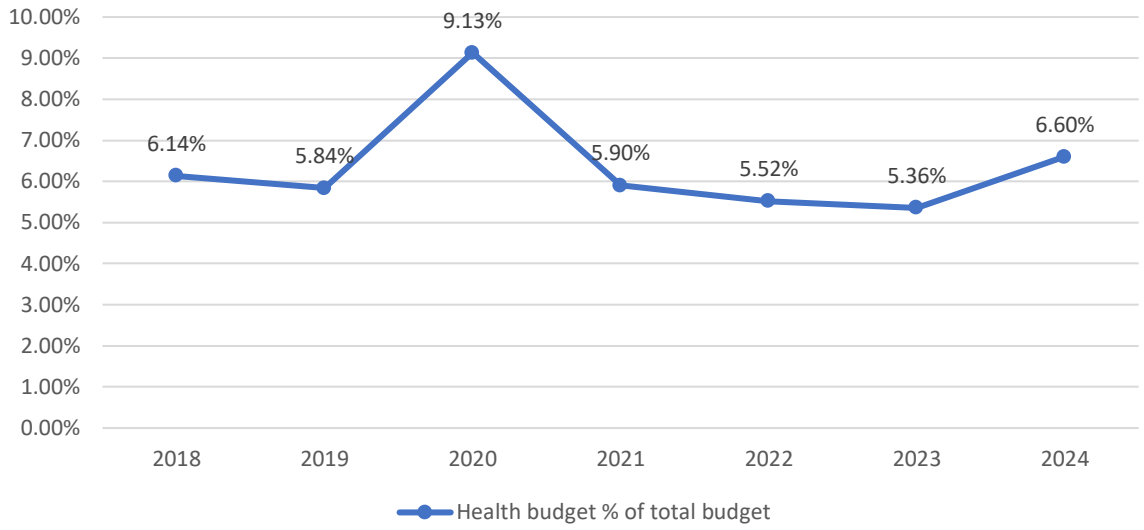

Figure 2: Percentage of annual state budget spent on healthcare from 2018 to 2024 in Delta State, Nigeria

Figure 2 highlights critical gaps in healthcare allocations within the state's budget, consistently below 10%, with the highest allocation of 9.13% in 2020. This remains well below the Abuja Declaration's target of 15%. Healthcare budgeting showed minimal growth, rising from 6.14% in 2018 to 6.60% in 2024, with a subsequent decline following the 2020 surge in expenditure related to the COVID-19 pandemic.

Budgetary Composition and Expenditure Patterns

Trends in Budget Allocation

Table 3: Categories for the Delta State annual health budget 2018 – 2024 in billions

Year	Personnel	Overhead	Capital	Total Expenditure
2018	11.9	0.3	6.6	18.9
2019	12.2	0.7	9.8	22.7
2020	16.7	0.7	8.2	25.7
2021	14.9	0.7	7.0	22.6
2022	13.7	0.9	11.8	26.4
2023	15.6	1.0	13.9	30.6
2024	26.5	2.3	18.9	47.8
Min	**11.9**	**0.3**	**6.6**	**18.9**
Max	**26.5**	**2.3**	**18.9**	**47.8**
Average	**15.9**	**0.9**	**10.9**	**27.8**

Table 2 shows the breakdown of health budgets into personnel, overhead, recurrent, and capital expenditures. The annual maximum for personnel was 26.5 billion, with an average of 15.9. Overhead was 2.3 billion, with an average of 0.9 and capital expenditure maxed at 18.9 billion, with an average of 10.9 billion.

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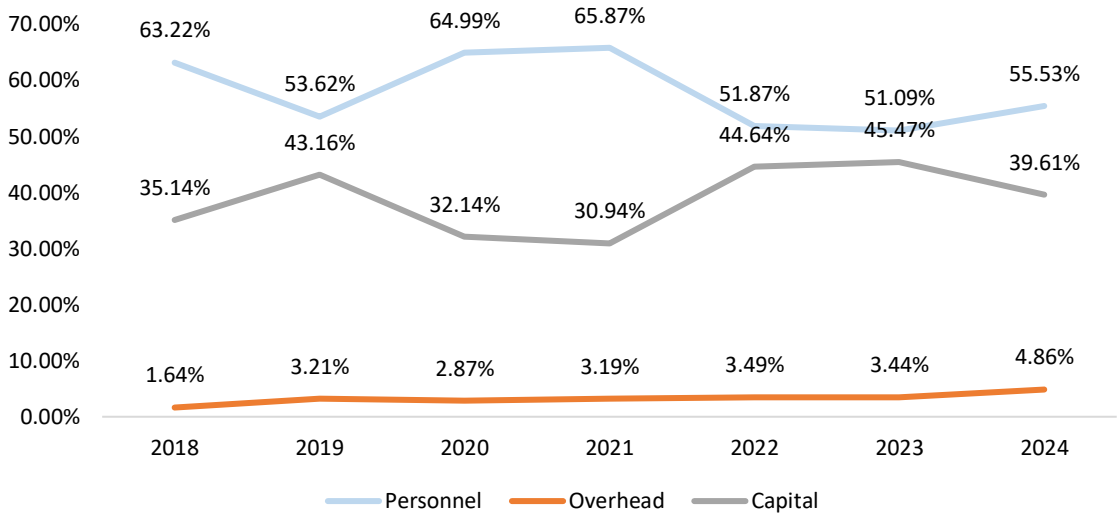

Figure 3: Percentage composition of Delta State total health budget allocation from 2018 to 2024

Figure 3 provides a percentage overview of Delta State's health budget allocation from 2018 to 2024. Personnel costs consistently accounted for the largest share, exceeding 50% of the budget, though this proportion decreased slightly over time. Capital expenditure, while variable, showed a steady upward trend, particularly after 2020, while overhead costs remained below 5% throughout the period.

Budget for Capital versus Recurrent categories

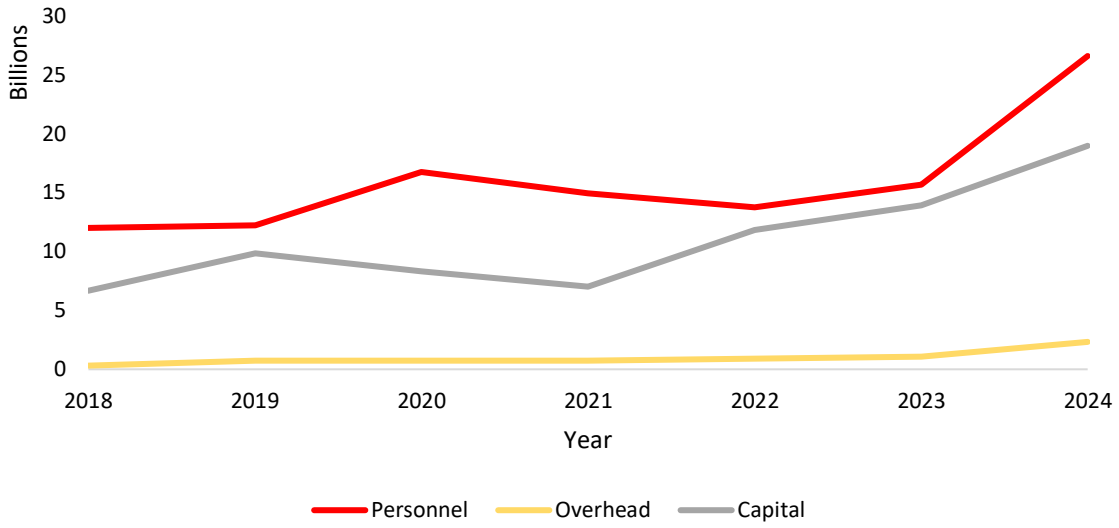

Figure 4: Volume trend of the composition of the Delta State total health budget allocation from 2018 to 2024

Figure 4 shows in a figurative composition that Personnel spending rose steadily from ₦11.988 billion in 2018 to ₦26.564 billion in 2024. Overhead costs were relatively stable, ranging from ₦0.311 billion to ₦2.232 billion. Capital expenditure doubled from ₦8.288 billion in 2020 to ₦18.950 billion in 2024, up from ₦13.919 billion in 2023. The 2020 surge in personnel costs (₦16.751 billion) aligns with heightened spending during the COVID-19 pandemic.

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Overhead Expenditures Distribution

Table 4: Overhead budget allocations to various parastatals within the health sector in Delta between 2018 and 2024 (in millions)

Year/Category	Hospital Management Board	Ministry of Health	Primary Health Care Development Agency	Schools	Hospitals	Special Programmes
2018	107.4	134.8	41.0	24.1	45.1	8.6
2019	107.4	443.8	74.0	24.1	74.2	8.6
2020	143.4	443.8	158.6	24.1	187.5	16.1
2021	109.2	193.8	126.0	24.1	250.0	58.6
2022	109.2	194.8	126.0	63.5	370.0	58.6
2023	109.2	194.8	126.0	63.5	610.4	77.0
2024	123.0	889.0	144.0	110.0	971.0	73.6
Min	**107.4**	**134.8**	**41.0**	**24.1**	**45.0**	**8.6**
Max	**143.4**	**889.0**	**158.6**	**110.0**	**971.0**	**77.0**
Average	**115.5**	**356.4**	**113.6**	**47.6**	**358.3**	**43.0**

The overhead budgets for major divisions were analysed and presented in Table 4 above, with graphical illustrations further shown below.

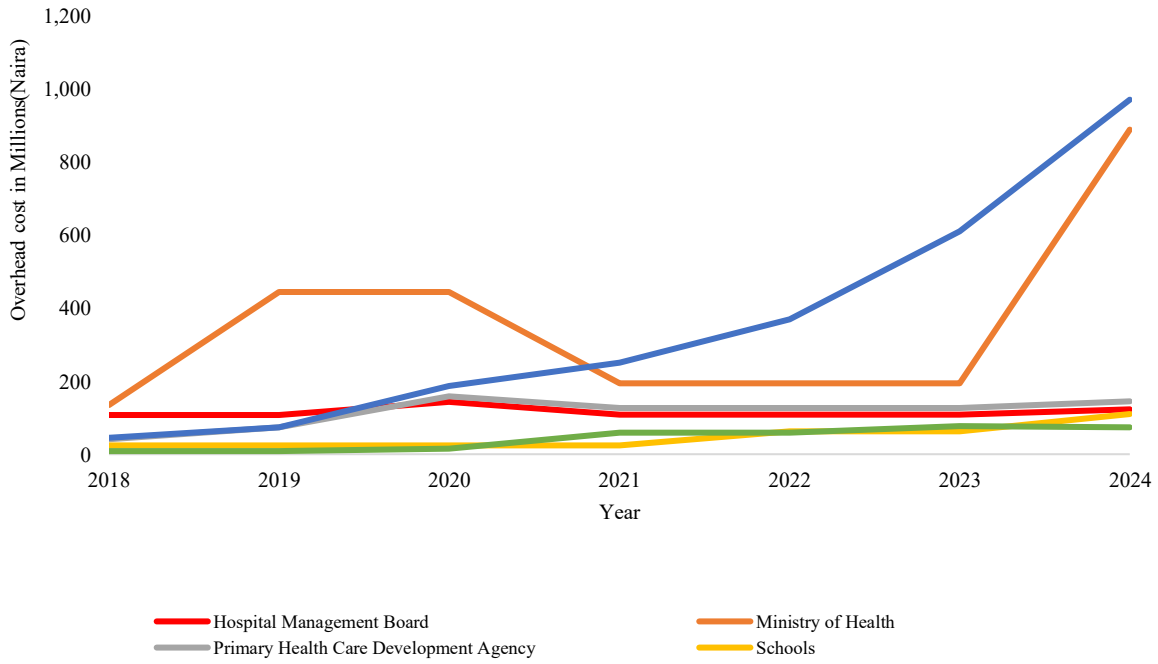

Figure 5: Line chart showing the trends of overhead costs

Figure 5 reveals fluctuations in overhead expenses across healthcare categories in Delta State from 2018 to 2024. The Ministry of Health consistently accounted for the largest share of these costs, peaking at ₦443.8 million in 2019 and 2020, before rising to ₦589 million in 2024. Hospitals experienced a sharp increase from ₦45 million in 2018 to ₦971 million in 2024, attributable to expansion and increased service demand. The Hospital Management Board maintained stable overheads, whereas the Primary Health Care Development Agency exhibited moderate variation. Schools witnessed a spike to ₦63.56 million in 2022–2023, then dropped to ₦11 million in 2024.

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Focus Areas on Health Investment

Health Insurance and Social Protection

The state government's investments in health insurance and social protection from 2018 to 2024 are divided into four categories: the Delta State Contributory Health Commission (DSCHC), Coronavirus Outbreak Activities, Basic Health Provision Funds, and the sum of these components.

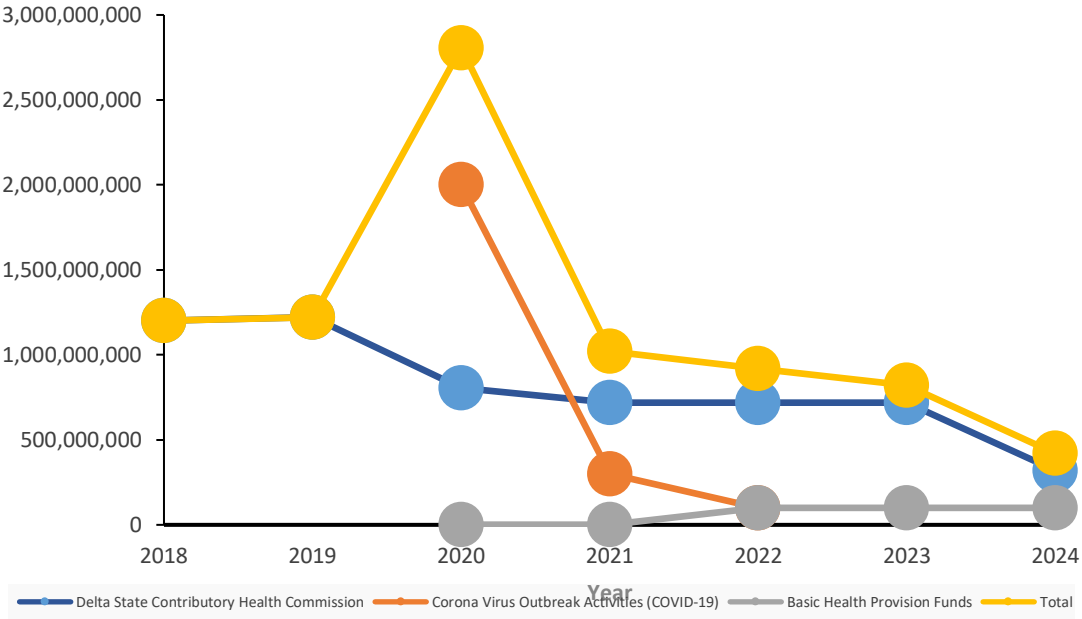

Figure 1: *Delta State investments in the COVID-19 outbreak, Basic Health Provision Funds, and the Delta State Contributory Health Commission (State insurance).*

Figure 6 shows a decline in Delta State Contributory Health Commission (DSCHC) funding from ₦1.2 billion in 2018 to ₦0.2 billion in 2024, a COVID-19 funding spike to ₦2 billion in 2020, and steady growth in Basic Health Provision Funds from ₦0.5 billion to ₦0.7 billion. Total investments peaked at ₦3.7 billion in 2020 but dropped to ₦0.9 billion in 2024,

Capital Projects and Programmes

Table 5: List of Priority Areas in Delta State Healthcare budget from 2018 to 2024

Year	AC (%)	DPR (%)	HIS (%)	HRI (%)	HIE (%)	PHI (%)	PMS (%)	RD (%)	Others (%)	Grand Total (%)
2018	0.69	3.30	18.01	6.53	67.90	3.30	0.00	0.26	0.02	100
2019	0.71	2.82	12.43	6.66	74.38	2.56	0.00	0.20	0.24	100
2020	0.28	42.09	0.04	2.71	50.12	3.57	0.76	0.39	0.03	100
2021	0.14	3.63	5.56	34.96	53.18	2.34	0.00	0.19	0.00	100
2022	1.24	0.85	6.97	2.82	83.70	3.98	0.09	0.26	0.09	100
2023	1.18	0.76	0.76	2.51	89.78	3.87	0.08	0.23	0.84	100
2024	0.43	0.79	2.22	5.46	86.30	4.38	0.05	0.16	0.22	100

Administrative Costs (AC), Disaster Preparedness and Response (DPR), Health Insurance and Subsidies (HIS), Human Resources Infrastructures (HRI), Healthcare Infrastructure and Equipment (HIE), Public Health Interventions (PHI), Pharmaceuticals and Medical Supplies (PMS), Research and Development (RD), and Others

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An analysis of healthcare spending priorities between 2018 and 2024 reveals several key focus areas, as shown in Table 5. A graphical illustration was further conducted as shown below.

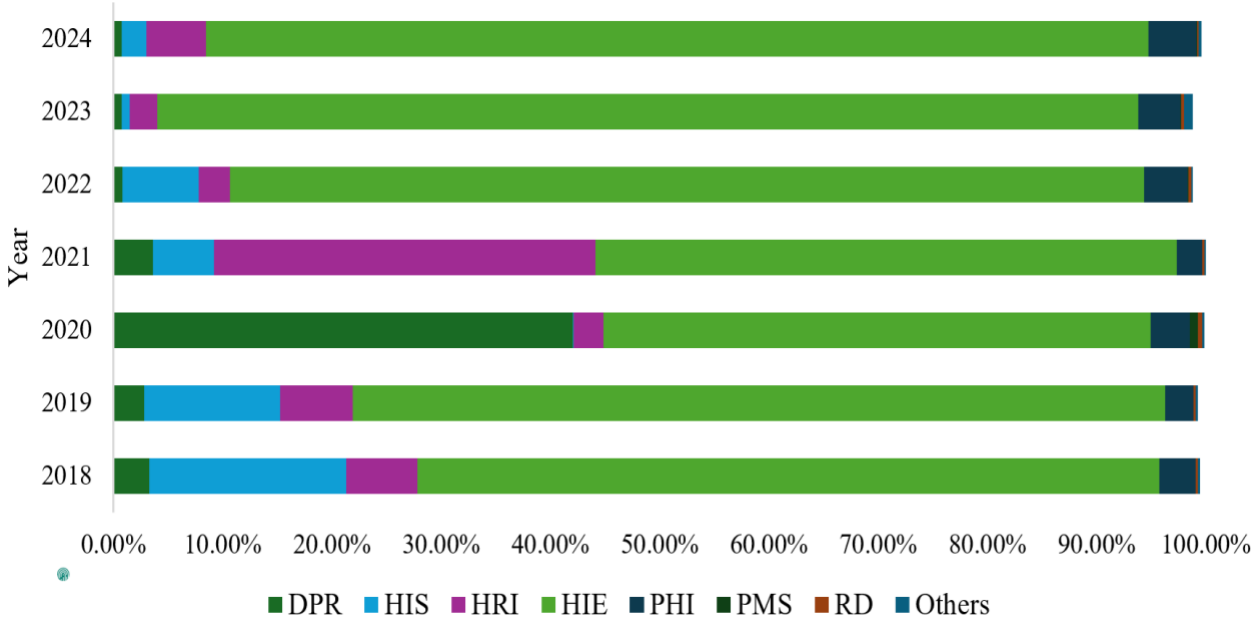

Figure 7: Prioritised capital projects and programs in Delta state healthcare from 2018 - 2024.

Figure 7 shows that Delta State's healthcare budget (2018–2024) prioritised infrastructure, emergency response, and essential services. Administrative Costs (AC) were minimal (0.14–1.24%). Disaster Preparedness and Response (DPR) peaked at 42.09% in 2020 (COVID-19 impact) but remained low otherwise. Health Insurance and Subsidies (HIS) fluctuated, peaking at 18.01% in 2018, with a sharp drop in 2020 (0.04%). Human Resources Infrastructure (HRI) saw notable allocations in 2021 (34.96%) and 2019 (6.66%). Healthcare Infrastructure and Equipment (HIE) accounted for the largest share, reaching 89.78% in 2023. Public Health Interventions (PHI) increased slightly (3.30% in 2018 to 4.38% in 2024). Pharmaceuticals and Medical Supplies (PMS) received limited funding, likely supplemented by donors, whereas Research and Development (RD) remained minimal, peaking at 0.62% in 2020.

Residents' Perspectives on Healthcare Projects and Interventions

During the qualitative interviews, participants shared their perspectives on the state's healthcare projects and interventions implemented over the past seven years, as well as their overall impact on healthcare.

Positive Feedback on Healthcare Initiatives:

Several participants acknowledged public health programs aimed at preventing communicable diseases. Their comments included references to sensitisation campaigns and access to vaccination services:

"I think they have done sensitisation on polio and other activities concerning health. They encourage people to go to government hospitals to access services at a lower rate."

"Immunisation against hepatitis B, measles, polio, and coronavirus."

"I am aware of the free eye clinic service provided by the government."

"The General Hospital here distributes drugs for river blindness."

Some participants highlighted safe maternal and child health services provided by the government, such as:

"The ones I know of are free maternal care and for children under five."

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"We have had free antenatal, delivery, and postnatal childcare programs."

Recognition of Healthcare Infrastructure Development:

Others commended the government's efforts in improving healthcare infrastructure and equipment:

"The government is providing facilities and equipment needed for smooth operations, like properly equipped diagnostic labs."

"I see some renovations in our healthcare system. There have been improvements; they are really trying."

Critical Views on Healthcare Projects:

Despite positive feedback, many participants expressed dissatisfaction with the management and implementation of healthcare initiatives. Criticisms included incomplete or abandoned projects:

"Apart from the renovation of the buildings, I have not seen any work they did."

"They set up a health centre, but it is not functioning."

"The health centres built here, after being commissioned, have become abandoned projects."

Participants also lamented the lack of projects in certain areas, as demonstrated by these remarks:

"The government has not done anything in my area."

"I am not aware of any healthcare project carried out by the government."

Their diverse views are summarised in Figure 8, showcasing a word cloud of their responses.

Figure 8*: Word cloud of residents' opinion about the attributes of the healthcare system, projects and programs in Delta State, Nigeria (source: Qualitative Survey).*

The word cloud in Figure 8 emphasises key concerns residents express regarding healthcare projects and interventions in Delta State, Nigeria. Prominent phrases such as "*Lack of maintenance,*" "*Unsatisfied*," "*Limited service*," "*Limited projects*," and "*No projects*" highlight recurring frustrations over inadequate healthcare delivery, insufficient infrastructure, and neglected facility upkeep.

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DISCUSSION

The analysis of government healthcare financing in Delta state, Nigeria, from 2018 to 2024, reveals several critical patterns and implications for healthcare delivery and UHC.

Government Healthcare Budget Trends

Delta State's healthcare budget from 2018 to 2024 revealed a nominal increase from N18.96 billion in 2018 to N47.84 billion in 2024, indicating a growing financial commitment. However, this growth requires careful consideration of currency devaluation; for instance, while $1 equalled N361.3 in 2018, it rose to N1,471.7 by 2024. When adjusted to USD, healthcare investment decreased from $52.5 million in 2018 to $32.5 million in 2024, highlighting reduced actual spending amid global increases in public health expenditure.[29, 30] Despite steady GDP growth from N4.05 trillion in 2018 to N4.8 trillion in 2024, healthcare spending remained below the recommended 5% of GDP, ranging from 0.47% in 2018 to 0.98% in 2024. Although this reflects a doubling of health budget as a share of GDP, it contrasts sharply with the high-income countries like the OECD, which has an average of 9.9% in 2019 and countries like the US at 16.9%.[31] Healthcare allocations as a proportion of Delta State's total budget peaked at 8.9% in 2020 but showed minimal improvement overall, with 6.14% in 2018 and 6.60% in 2024. This consistent underfunding demands a critical reassessment of the state's commitment to healthcare financing for UHC achievement. Similar trends are evident nationwide, where studies highlight low health financing levels.[32, 33] Addressing these requires well-financed systems to improve healthcare access.[1, 30]

Composition of Healthcare Expenditure

Globally, healthcare resources are often allocated based on human resources, facilities, and management capacity [34]. Delta State's health budget from 2018 to 2024 reflects a strategic focus on personnel costs, capital expenditure, and overhead expenses. Personnel costs consistently accounted for over 50% of the annual health budget, underscoring the state's investment in human resources. This trend is similar to global findings, such as those reported by Naeri et al [35] in a study in Afghanistan, where personnel costs constituted up to 70% of NGO healthcare budgets. Rising inflation and living expenses have necessitated increased remuneration for health workers, with personnel expenditure climbing from ₦11.99 billion in 2018 to ₦26.56 billion in 2024, representing 51.09% to 65.87% of the health budget.

Capital expenditure ranged from 30.94% to 45.45% of the total health budget, with significant growth after 2021. Investment in infrastructure doubled from ₦7.01 billion in 2021 to ₦18.95 billion in 2024, reflecting efforts to enhance healthcare facilities, equipment, and service delivery, likely spurred by lessons from the COVID-19 pandemic. These trends highlight the dynamic nature of budget allocations, driven by disease burden, economic conditions, policy priorities, and external funding. Seixas et al.[36] emphasize the importance of formal decision-making frameworks to optimise infrastructure investment and align it with health system goals.

Overhead expenses consistently formed the smallest portion of the health budget, remaining under 5% and ranging from ₦0.31 billion to ₦2.23 billion. While stable, these low allocations indicate prioritising budgeted human resources and infrastructure costs over "loosely assigned" administrative costs. Notably, overhead spending surged to ₦16.75 billion in 2020 due to the COVID-19 response, illustrating the adaptability of healthcare budgets during critical external shocks.[37]

Overhead Cost Assignment

The percentage share of Delta State's overhead expenditure on health initially favoured the Ministry of Health (MOH), which consistently received the largest share until 2021. However, hospitals, including the Delta State Teaching Hospital, began to take the lead in overhead costs, demonstrating a steady rise from 2018 to 2024. By 2023, the MOH's overhead expenditure started to increase significantly, closely matching the hospitals' share in 2024. These rising costs underscore the need for careful evaluation to identify an equivalent output through accountability, just as Kutzin[38] emphasises that achieving Universal Health Coverage (UHC) requires improved efficiency, transparency, and evidence-based allocation of resources. This is also consistent with the recommendations of Adewole et al.,[39] Hanson et al.,[40] and Onwujekwe et al.,[12] who advocate for results-driven approaches to healthcare financing, in which funds are allocated based on effectiveness rather than traditional criteria.

Entities such as schools, hospitals, the Primary Health Care Development Agency, and special programs incurred lower overhead costs because they relied on MOH for operations. Notably, the Hospital

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Management Board (HMB) and special programs experienced peak overhead in 2020, likely attributable to pandemic-related expenditures. Similarly, MOH overheads surged in 2019 and 2020, reflecting the broader impact of COVID-19 on healthcare budget dynamics.

Investment in Health Insurance and Social Health Protection

The Delta State Contributory Health Commission (DSCHC), recognised as one of Nigeria's top-performing health insurance schemes, boasts the highest number of enrollees.[15, 41] However, investments in the scheme fluctuated significantly over the 7-year period, rising from N1.2 billion in 2018 to peaks in 2019 and 2020 during the COVID-19 response, before dropping drastically to N320 million in 2024. This decline, likely influenced by the state's "take-off" funds, is unsustainable given the insufficient enrollment of formal and informal participants. Consistent funding is crucial to making the scheme appealing and accelerating Universal Health Coverage (UHC).[4, 38]

A special COVID-19 fund, initiated in 2020, increased from N200 million in 2020 to N300 million in 2021, reflecting the government's response to easing financial pressures during the pandemic. However, this fund diminished over time, disappearing by 2023 as COVID-19 impacts subsided. Meanwhile, Basic Health Provision Funds showed steady growth, rising from N2.94 million in 2018 to N100 million in 2024, reflecting the commitment to foundational healthcare services critical for public health outcomes.

Total investments in insurance and social health protection peaked at N2.81 billion, ranging from N1.2 billion in 2018 to N420 million in 2024. This underscores the need for a sustainable funding strategy to balance immediate crisis responses with long-term healthcare goals. While the DSCHC achieved notable progress, such as pharmaceutical partnerships and free healthcare for widows, these efforts cannot offset declining insurance investments, particularly as many Nigerians still rely on out-of-pocket payments.[11, 42] Equity, a key UHC principle, necessitates addressing the needs of the poor and vulnerable.[8, 43] Inconsistent investments risk inequities in healthcare access, disproportionately affecting public health service users. Despite achieving 30.25% state-wide enrollment by 2024, surpassing the 25% 7-year target for 2023, formal and informal health plan participation remains low at 3.26% and 7.62%. Notably, 89.12% of DSCHC enrollees are vulnerable groups. To enhance public enrollment in DSCHC, the state must improve promotion efforts and consider a premium adjustment from the current N7,000 (approx. $4.66) per annum to match rising healthcare costs and inflation.[44] Strategic fund pooling through Health Maintenance Organizations (HMOs) could spread risk, reduce government burdens, and improve system efficiency and cost containment.[45] A community-level engagement is another viable mechanism to consider.

Priority Areas in Delta State Healthcare Capital Expenditure

Healthcare Infrastructure and Equipment (HIE) consistently dominated capital investments, accounting for 50.12% to 89.78% of the healthcare budget between 2018 and 2024. Allocations surged post-COVID-19, rising from 53.18% in 2021 to 83.70% in 2022. Key initiatives included constructing new hospitals, renovating healthcare centers, and equipping facilities, critical steps in improving service delivery.[46, 47] However, Kodali [1] stresses the importance of balancing infrastructure development with investments in human resources and medical supplies. Investments in workforce-related infrastructure, such as nursing schools and hospital libraries, spiked during the pandemic, reaching 43.96% of capital expenditure, but fell to 2.51% in 2023 and 5.46% in 2024. Workforce development is essential for an effective healthcare system,[23] yet these trends suggest fluctuating commitment.

Public health interventions accounted for 2.34% to 4.38% of capital expenditure by 2024, supported by partnerships with private entities, donors, and NGOs. Essential drugs and medical supplies remained under 1% of the budget across the period, with allocations starting in 2020. Although these efforts addressed access to medicines, clearer budget definitions would enhance transparency and efficiency.[48–50] Also, health Insurance and Subsidies (HIS) consistently ranked second but saw a decline during the pandemic, as funds shifted toward disaster response, increasing by 40% from the prior year's 2.82%. While health insurance remained a key focus, investments dropped from 18.01% in 2018 to 2.22% in 2024, impacting the development of schemes like DSCHC.

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Research and Development (R&D) and administrative costs both accounted for less than 1% of capital expenditure. While library facilities were provided at the State Teaching Hospital, direct funding for active research was minimal, hindering the creation of evidence-based strategies.[51] Administrative costs peaked during infrastructure projects post-2022, but reflected a reactive rather than proactive funding approach, which is less effective for sustainable and efficient healthcare delivery.

Alignment with Global Public Health Priorities

Infrastructure development dominated healthcare investments in Delta State from 2018 to 2024, reflecting a significant focus on physical facilities. While commendable, this emphasis must be analysed in the context of budget sufficiency and balance. Overreliance on infrastructure without parallel investments in other critical areas, such as human resources and medical supplies, risks suboptimal outcomes.[23, 52] The WHO emphasised the importance of integrating preventative and curative services alongside addressing social determinants of health to achieve comprehensive healthcare improvements.[53] This includes a diversified focus on behavioural and social determinants of health. Meanwhile, investments in health insurance and subsidies were inconsistent, with a concerning decline in funding for the Delta State Contributory Health Commission (DSCHC). This instability threatens the scheme's sustainability, as current enrollees and premiums alone cannot support its operations. It therefore undermines the WHO recommendations for better financing models, including revenue generation, risk pooling, and strategic purchasing, as essential criteria for improved health outcomes[2, 8]

Education and the provision of essential medicine were also partially aligned with best practice and expectations. Notably, although reactive as established above, the State's post-pandemic prioritisation of training and education institutions is a strategic step to address workforce shortages and health worker migration, which are key components of Universal Health Coverage (UHC).[23] Pharmaceutical and medical supply investments remained low and poorly defined in budgets. Access to essential medicines is critical for a resilient healthcare system and achieving Sustainable Development Goal (SDG) 3.[23] Efforts should extend beyond vaccines and supply chain infrastructure to ensure the availability of essential medicines, particularly given the rising burden of non-communicable diseases.[54] This is a core component of strategic purchasing mechanisms that would ensure more effective resource utilisation.[2]

The state should also consider actively exploring the uncharted waters of local drugs and vaccines research and development, and medical equipment manufacturing. Perhaps the most critical gap lies in the minimal investment in research and development (R&D), which is vital for evidence-based planning and program development. Without robust research, the state risks undermining the resilience and effectiveness of its healthcare system.

Global best practices for healthcare financing emphasise equity, efficiency, and sustainability.[55] Achieving these requires aligning funding with local contexts and strengthening primary healthcare through adaptive, resource-based interventions. While the state's response to COVID-19 highlighted adaptability, it involved significant budget reshuffling and cuts in other areas. Prolonged pandemics or similar crises could lead to severe hardship due to insufficient disaster preparedness and proactive budgeting. Reputable resources emphasise the need for health systems to mitigate and adapt to shocks rather than merely responding reactively.[56–58]

Users' Perceptions of Government Healthcare Projects and Interventions

The qualitative survey revealed mixed levels of awareness among participants regarding healthcare projects and programs in Delta State. While some recognised infrastructure upgrades, equipment procurements, and public health initiatives such as immunisations and free maternal care, the majority expressed dissatisfaction and a lack of awareness regarding government efforts. Many participants noted the absence of visible healthcare projects in their communities, with some voicing strong displeasure over inadequate healthcare systems and management. It is evident that the healthcare projects and interventions are not uniformly distributed across the state. Efforts must be made to promote equity and reach every Delts State resident in the quest for "*health for all*" policies. This finding indicates that the Delta State healthcare system fails to adequately meet the first key criteria of structure, services, and outcomes, essential for evaluating

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healthcare quality per Donabedian's model system.[59] It also suggests the system is below the optimum scale to fulfil the three essential objectives of the WHO Health Financing Cube, which aims to "*provide more and better quality services, to a greater proportion of the population in need, while also increasing the level of financial protection.*"[60]

Most importantly, these perceptions contrast with reports of increased healthcare budgets and infrastructure investments, suggesting a disconnect between government actions and public awareness or satisfaction. Osakede [61] similarly highlighted the misalignment between public health spending and health outcomes in Nigeria, advocating for improved governance to drive development in healthcare and the broader economy. To enhance healthcare delivery standards, Delta State must ensure judicious allocation and transparent management of funds for the benefit of all residents. This is an urgent call for policy realignment to address the deficits and weaknesses in the state's healthcare financing and delivery system.

Recommendations for Policy and Practice

Based on these findings, the following recommendations are made to strengthen healthcare financing in Delta State and make significant progress toward achieving UHC:

1. **Short-Term (1–2 Years)**
   - Ensure consistent and sustainable funding for the Delta State Contributory Health Commission (DSCHC) to attract users and expand coverage until enrolment levels are sufficient to sustain the system.
   - Increase funding for preventative healthcare programs and awareness campaigns to reduce the disease burden.
   - Take immediate steps to enhance transparency and administrative efficiency, ensuring that increased administrative costs result in better healthcare service delivery.
2. **Medium-Term (2–5 Years)**
   - Increase healthcare professionals' recruitment, training, and retention to build a strong and sustainable health workforce.
   - Research and prioritise strategic purchasing practices to ensure resources, especially for essential commodities, are utilised effectively.
   - Proactively allocate resources to improve disaster preparedness and response mechanisms to manage health emergencies better.
3. **Long-Term (>5 Years)**
   - Significantly raise healthcare funding to meet or exceed the global threshold of 5% of GDP, accounting for inflation and the Naira's devaluation.
   - Prioritise and adequately fund research and development in the health sector to promote evidence-based policymaking and targeted interventions.

Strengths of the Study

This study offers a valuable contribution to understanding healthcare financing in Delta State, Nigeria, through a comprehensive analysis of government spending from 2018 to 2024. It demonstrates an excellent initiative in gathering robust data, particularly through public information sources, thereby strengthening the study's comprehensiveness. It applied triangulation through a mixed-methods approach that collected qualitative data through informant interviews. Further strength lies in its direct relevance to achieving Universal Health Coverage (UHC) and Sustainable Development Goal 3, and in its granular breakdown of budget allocations, with a multifaceted examination of budget allocations, health insurance investments, and healthcare projects. The research employs descriptive analyses in Microsoft Excel and SPSS to ensure robustness and reliability, and addresses transparency through careful citation, anonymisation, and multi-step accuracy verification.

Limitations of the Study

The study's reliance on secondary data introduces potential limitations tied to the accuracy and completeness of the primary records. This part of the dissertation research primarily focuses on government healthcare financing. It may appear exclusive of other healthcare contributions, such as out-of-pocket payments, donor funding, and private insurance, when considered in isolation. Additionally, the study has records of GDP values only for 2018 to 2022, with the average percentage increase used to estimate 2023 and 2024, which may introduce marginal errors due to actual economic fluctuations.

CONCLUSION

This study analysed government healthcare financing trends in Delta State, Nigeria, from 2018 to 2024. It found that healthcare expenditure increased nominally but actually decreased when adjusted for currency

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devaluation, remaining below the global threshold of 5% of GDP and the Abuja Declaration's 15% target. The budget prioritised personnel costs; capital expenditures rose after 2021, while overhead expenses remained low. Investments in the Delta State Contributory Health Commission declined, with a temporary increase in funding for the COVID-19 response. The study emphasised the need for strategic resource allocation and higher investment to achieve Universal Health Coverage (UHC) and improve healthcare access, quality, and outcomes. Future research should evaluate expenditure efficiency, explore financing alternatives, assess the impact of donor funding on pharmaceuticals and supplies, and, most importantly, examine specific purchasing practices. Building a resilient healthcare system is critical for addressing Delta State's evolving needs.

Ethical Considerations

The research proposal received protocol approval from the Delta State Ministry of Health (HMT/596/T²/173) on February 28, 2024. Participation in the interview was voluntary and fully anonymous. Qualitative interview participants gave a written informed consent before the start of each interview. The data remained fully anonymous, excluding any identifying details. Data were secured and protected from unauthorised access.

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