Journal of Economics, Finance and Management Studies

ISSN (print): 2644-0490, ISSN (online): 2644-0504

Volume 08 Issue 05 May 2025

Article DOI: 10.47191/jefms/v8-i5-05, Impact Factor: 8.317

Page No: 2604-2611

Health Care Expenditures and Financial Burden Across Nigeria's Northwestern States: An Actuarial Perspective

Ismaila Adeleke[1], Aminu Ma'aruf Nass[2]

[1]Department of Actuarial Science & Insurance, University of Lagos, Lagos State, Nigeria

[2]Department of Actuarial Science, Federal University Dutse, Dutse, P. M. B. 7156 Jigawa State, Nigeria

ABSTRACT: This paper presents an actuarial analysis of healthcare expenditures and utilisation patterns across Nigeria's Northwestern states. While prior research has examined out-of-pocket expenditures, a actuarial analysis of disease patterns and cost drivers remains critical for evidence-based policymaking. Using retrospective health insurance claims data from over sixty thousand enrollees nationwide, the study estimates nationwide healthcare utilisation rates and costs across disease categories, age groups, and gender using ICD-II classification, supplemented by regional accessibility surveys. Results indicate diseases of the circulatory and endocrine systems are among the most utilised and costly, with older adults incurring the highest healthcare expenses. Budget analysis reveals wide disparities in health spending among states. The analysis underscores the important of actuarial modelling in guiding resource allocation, forecasting financial needs, and informing health financing reforms. The findings call for risk pooling, equitable budgeting, and the development of sustainable state health insurance schemes to reduce financial burden and improve healthcare access.

KEYWORDS: Actuarial analysis; healthcare Utilisation; Northwestern Nigeria; Financial Burden

1.0 INTRODUCTION

To ensure universal healthcare for Nigerians, the National Health Insurance Authority (NHIA) Act, 2022 was enacted by repealing the National Health Insurance Scheme (NHIS) Act, 2004 with the goal to facilitate health coverage for all Nigerian residents by overseeing the promotion, regulation, integration of health insurance schemes, improving and harnessing private sector participation in the provision of health care services for all Nigerians (NHIA, 2022). This study, which is part of a broader attempt to investigate household healthcare expenditures and financial burden across Nigeria's Northwestern States will provide a detailed understanding of healthcare utilisation and costs among different age, gender, and disease groups. The governments' expenditure on health care for the seven states are also analysed in order to understanding the variation which may be important for future healthcare plans. For the states in this region of the country to effectively deliver accessible and quality health care for their people, actuarial analysis is needed to estimate the costs of health reforms and guide decisions relating to the scope of and funding mechanisms for a state health insurance program. However, in order to complete this actuarial analysis, accurate and detailed information about healthcare utilisation and costs among enrollees of the state insurance schemes is needed. The estimated costs of providing health care and the guidance on the scope of and funding mechanisms for states health insurance program will be an important input for health care administrators, policy and lawmakers, health system planners, and other stakeholders in in the north west region of the countries so as to make informed decisions on their healthcare system.

Healthcare Utilisation rate is the consumption of healthcare services, including hospital admissions, outpatient visits, emergency department visits, diagnostic tests, and procedures. This utilisation rate is a critical component in understanding the burden of diseases and the efficiency of healthcare systems. It comprises both the frequency of healthcare services used by patients and the associated costs. Costs are usually structured by many constituents such as hospitalizations, medical procedures, medications, outpatient visits, and other healthcare services (categorized as direct, indirect costs, overheads, and so on). Disease burden is the impact of a health problem as measured by financial cost, mortality and other indicators. It is an important indicator of the state of health of a population. Accurate disease burden information is essential for policy-making such as prioritization of health interventions and allocation of resources and estimates are used for prioritising actions in health and the environment, planning for preventive action, Assessing performance of healthcare systems among others.

Several studies have been published using data reflecting actual claims paid by health insurance schemes in Nigeria. These studies have focused on (i) risk adjustment [Ajilola, Ojikutu and Adeleke (2019), Johncally and Adeleke (2020), Adeleke I. (2018)] and (ii) understanding the factors affecting Health Maintenance Organisation (HMO) payments [Akinyemi, Adeleke and Adedoyin (2018), Adeleke, Dallah, and Ibiwoye, (2012)]. The published studies provide some information on the costs associated with particular groups of diseases but do not allow a more detailed analysis of the effect of disease on healthcare costs. Also, these studies as published do not allow for the number of claims likely to be made by any individual with a particular disease, or groups of disease, to be estimated.

In Nigeria, healthcare financing remains a crucial topic in the quest for improved public health outcomes. The Northwestern region, comprising states like Kano, Kaduna, Katsina, Kebbi, Jigawa, Zamfara, and Sokoto, faces unique challenges when it comes to health expenditures, including limited resources, growing populations, and varying levels of governmental commitment.

2.0 DATA AND METHODOLOGY

This paper uses both primary and secondary data sources to analyse healthcare expenditures and financial burdens from an actuarial perspective.

2.1 Primary Data

Primary data were obtained through a structured questionnaire administered to 600 households across the seven Northwestern states of Nigeria. The survey captured data on socio-demographic characteristics, healthcare financial burden, insurance coverage using purposive approach.

2.2 Secondary Data

Two sources of secondary data were utilised; 2023 state-wise healthcare budget allocations for each of the seven states to assess actual healthcare expenditure. A pseudonymised dataset covering over sixty thousand enrolees across Nigeria was used to compute disease-specific healthcare utilisation rates and average treatment costs. Members included in the analysis had continuous enrolment and at least one claim within a 12-month period. To ensure anonymity, over one thousand records were excluded at random. Disease classification follow the International Classification of Diseases (ICD-II) standard. While the dataset is national in scope, its results inform broader actuarial modelling relevant for reginal policy design.

2.3 Methodology

The analysis of the insurance claims data involved disaggregation by age group, gender, and disease classification to evaluate utilization rates and average cos per claim. Concurrently, descriptive analysis of the household survey data was conducted to quantify financial burden and socio-demographic disparities in healthcare access. Together, these data sources provide both actuarial and behavioural perspectives, enhancing the relevance of the findings for policy formulation in the Northwest.

4.0 RESULTS AND DISCUSSION

4.1 Budgetary Allocations

The 2023 health care expenditure data for the Northwestern states reveals a diverse picture of health financing across the region. States such as Kano and Jigawa allocate significant portions of their budgets to health care, while others like Katsina and Zamfara struggle with lower per capita health spending.

Kano State

Kano, the most populous state in Northwestern Nigeria, has the highest total health expenditure in the region, amounting to ₦37.09 billion. With a population of over 16 million, this equates to a per capita health expenditure of ₦2,281.97. Despite this relatively high total, health spending only makes up 10.59% of Kano's total budget, suggesting that there may still be significant room for improvement in terms of prioritizing health financing.

Kaduna State

Kaduna, with a population of 8.32 million, allocates ₦20.74 billion for health care, resulting in a per capita health expenditure of ₦2,491.70. While this is higher than Kano's per capita figure, health spending constitutes only 5.58% of the state's budget. This indicates that while per capita spending is relatively high, the state may not be dedicating a large enough share of its overall resources to meet the needs of its population.

Katsina State

Katsina's health expenditure stands at ₦10.48 billion for its population of over 9 million, resulting in a modest per capita health expenditure of ₦1,127.01. Only 3.5% of Katsina's total budget is directed toward health care. This low proportion underscores the

financial constraints faced by the state in addressing its citizens' health needs, which may contribute to disparities in health service delivery

Kebbi State

Kebbi allocates ₦7.84 billion toward health, serving a population of approximately 6 million. With a per capita expenditure of ₦1,306.67 and 7.57% of the total budget dedicated to health, Kebbi's health financing is slightly better than Katsina's, but still falls behind some of its regional counterparts in terms of prioritizing health care.

Jigawa State

Jigawa stands out with a per capita health expenditure of ₦4,564.81, the highest in the region. The state spends ₦31.86 billion on health for its population of nearly 7 million, which represents 15.13% of its total budget. This significant allocation suggests a strong commitment to improving health outcomes in the state, although the effectiveness of these investments requires further assessment.

Zamfara State

Zamfara, with a population of 5.5 million, allocates ₦7.97 billion to health care. This translates to a per capita health expenditure of ₦1,444.25, with health spending comprising 6.47% of the state's total budget. While this is an improvement over states like Katsina, it is still relatively low when compared to Jigawa and Kaduna.

Sokoto State

Sokoto, with a population of 6.16 million, allocates ₦13.23 billion for health, resulting in a per capita expenditure of ₦2,146.23. This accounts for 6.66% of Sokoto's total budget. The state's spending on health is moderate but still faces challenges in terms of ensuring comprehensive health coverage for all its citizens.

4.2 Utilisations Rates by Disease, Gender, and Age

Table 1 provides the average utilisation of healthcare services across different disease categories, segmented by various demographics such as gender and age. Details presented suggest that the most significant healthcare utilisation occurs for diseases of the circulatory system, followed by factors influencing health status and endocrine/metabolic diseases. The youngest age groups (0-4) show higher utilisation for infectious diseases, digestive system issues, and certain conditions related to the blood and respiratory systems. Older populations (50+) have higher utilisation for circulatory and metabolic diseases, as well as conditions like visual issues. Gender differences are prominent in categories like circulatory diseases, where men show a higher utilisation than women. However, categories like pregnancy and maternal health are naturally specific to women. This detailed view allows for targeted healthcare planning based on age, gender, and disease categories. By age trends**,** utilisation peaks in older age groups (50+), particularly for circulatory and endocrine diseases, but is relatively low for younger age ranges. This data can be helpful for understanding healthcare trends and disparities, guiding policies, and focusing on the most pressing health concerns for each demographic.

Table 1: Average Utilisation Rate for each Disease Categories across ages and gender

Disease Category	Population	Male	Female	Age Range 1 (0-4)	Age Range 2 (5-17)	Age Range 3 (18-49)	Age Range 4 (50-64)	Age Range 5(65+)
Diseases of the circulatory system	49.96%	72.66%	53.02%	25.93%	16.00%	34.36%	76.79%	76.98%
Factors influencing health status or contact with health services	28.92%	1.49%	31.74%	20.74%	49.50%	54.23%	0.89%	0.43%
Endocrine, nutritional or metabolic diseases	12.22%	21.04%	13.21%	11.11%	3.63%	7.76%	20.79%	21.53%
Certain infectious or parasitic diseases	2.34%	1.10%	0.53%	9.38%	5.88%	0.83%	0.51%	0.26%
Pregnancy, childbirth or the puerperium	2.28%	0.00%	0.26%	0.49%	1.75%	0.41%	0.01%	0.01%
Diseases of the digestive system	1.73%	2.31%	0.50%	20.99%	17.13%	1.25%	0.42%	0.28%
Diseases of the visual system	0.53%	0.38%	0.15%	1.23%	0.88%	0.16%	0.22%	0.25%

Diseases of the musculoskeletal system or connective tissue	0.38%	0.19%	0.05%	0.99%	0.50%	0.08%	0.09%	0.06%
Diseases of the genitourinary system	0.33%	0.15%	0.10%	2.22%	0.88%	0.18%	0.04%	0.03%
Diseases of the respiratory system	0.32%	0.27%	0.15%	2.47%	1.25%	0.22%	0.13%	0.10%
Neoplasms	0.27%	0.13%	0.08%	0.49%	0.25%	0.13%	0.06%	0.04%
Symptoms, signs or clinical findings, not elsewhere classified	0.12%	0.06%	0.02%	0.25%	0.38%	0.04%	0.02%	0.00%
Injury, poisoning or certain other consequences of external causes	0.11%	0.04%	0.01%	0.00%	0.38%	0.02%	0.01%	0.00%
Certain conditions originating in the perinatal period	0.11%	0.00%	0.14%	0.25%	0.13%	0.24%	0.00%	0.00%
Diseases of the blood or blood-forming organs	0.11%	0.03%	0.01%	2.22%	0.25%	0.02%	0.00%	0.00%
Diseases of the immune system	0.09%	0.01%	0.00%	0.25%	0.50%	0.01%	0.00%	0.00%
External causes of morbidity or mortality	0.06%	0.06%	0.01%	0.25%	0.50%	0.04%	0.00%	0.00%
Diseases of the skin	0.04%	0.04%	0.01%	0.00%	0.00%	0.02%	0.02%	0.01%
Diseases of the nervous system	0.03%	0.01%	0.00%	0.00%	0.13%	0.01%	0.00%	0.00%
Developmental anomalies	0.02%	0.01%	0.01%	0.74%	0.00%	0.01%	0.00%	0.00%
Conditions related to sexual health	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Diseases of the ear or mastoid process	0.01%	0.01%	0.00%	0.00%	0.13%	0.00%	0.00%	0.00%

4.3 Healthcare Costs by Disease, Gender, and Age

Table 2 presents the average healthcare costs across various disease categories, segmented by population, gender, and age groups. The key highlights in this tables are that: Healthcare costs vary significantly by disease category, with Diseases of the Digestive System and Pregnancy, Childbirth or the Puerperium being among the highest-cost conditions. On Gender-Based Cost Differences**,** some categories have substantial gender disparities in costs, like Pregnancy, Childbirth, and Diseases of the Genitourinary System, where female costs are notably higher. For Age-Based Cost Trends**,** Costs tend to increase with age, especially for conditions like Diseases of the Circulatory System**,** Neoplasms, and Diseases of the Digestive System. The highest costs are seen in older age groups, especially 65+**.** This information can be useful in understanding the economic burden of various diseases across different demographic groups, and it can help guide healthcare budgeting, policy development, and resource allocation.

Table 2: Average Health Care Costs (in NGN) for each Disease Categories across ages and gender

Disease Category	Population	Male	Female	Age Range 1 (0-4)	Age Range 2 (5-17)	Age Range 3 (18-49)	Age Range 4 (50-64)	Age Range 5(65+)
Diseases of the digestive system	116,999.61	22288.11	15074.58	20414.61	17461.12	17888.22	22827.2	28011.03
Pregnancy, childbirth or the puerperium	105,470.18	0	13548.66	10000	12910.71	13516.39	23333.33	10000

Diseases of the genitourinary system	83,135.25	12612.17	16339.51	10883.33	11978.57	17057.52	6426.667	18407.14
Symptoms, signs or clinical findings, not elsewhere classified	81,856.50	6320.667	16547.5	8960	7950	16214.16	6600	2000
Certain conditions originating in the perinatal period	75,489.83	6000	13809.49	6000	10000	13842.33	0	0
Injury, poisoning or certain other consequences of external causes	72,928.33	10848.33	21971.43	0	13250	14975.45	16125	15000
Neoplasms	68,514.68	13050	13842.89	21250	11250	14364.68	11631.52	11688.33
Factors influencing health status or contact with health services	53,833.54	8161.169	10289.38	6586.131	6782.184	10354.26	8564.84	7885.648
External causes of morbidity or mortality	53,374.72	11686.25	17414.29	25000	5500	14816.47	10000	0
Diseases of the skin	51,161.86	5162.083	33461.2	0	0	15056.38	12485.71	10700
Diseases of the blood or blood-forming organs	38,956.40	6000	11148.5	5088.889	4000	14220.22	0	0
Diseases of the visual system	32,977.24	6001.635	5450	4238	3714.286	9249.189	4533.678	3030
Diseases of the circulatory system	26,877.14	3763.867	7747.643	3811.048	2557.031	3611.194	9390.378	4004.943
Certain infectious or parasitic diseases	25,892.81	4287.247	4032.746	4712.342	5573.872	4450.711	3243.693	3584.821
Developmental anomalies	21,110.00	4750	8010	6500	0	7512.5	0	0
Endocrine, nutritional or metabolic diseases	20,947.27	3668.675	3807.015	3705	3561.897	3554.357	3776.747	3894.962
Diseases of the respiratory system	19,459.62	2722.365	2508.512	4396.5	3095	2680.388	2212.745	1959.048
Diseases of the musculoskeletal system or connective tissue	19,065.74	4257.235	4317.791	2875	8630	4354.973	4137.297	3545.833
Conditions related to sexual health	14,500.00	0	14500	0	0	0	14500	0
Diseases of the ear or mastoid process	13,040.07	6100	2890.07	0	8800	2445.035	7500	0
Diseases of the nervous system	9,888.75	6658.75	2750	0	2000	4098.333	3500	14340
Diseases of the immune system	5,774.00	3937.503	2905	750	2905	5000.003	0	0

4.4 Integrating Actuarial and Household Level Evidence

While this study provides actuarial estimates of healthcare utilization and costs using insurance claims data, it is important to recognize that such actuarial insights can be enriched by complementary household-level data. Related survey-based research from the region highlights significant socio-economic disparities in healthcare access and financial burden, particularly among rural households and female respondents. For instance, evidence from field surveys shows that over 87% of households finance healthcare through out-of-pocket payments, with a majority resorting to borrowing or asset sales to meet medical expenses.

Moreover, urban households report higher insurance coverage and willingness to subscribe to health plans, compared to rural and female counterparts. These findings suggest that actuarial cost estimations should be interpreted alongside real-world behavioral and demographic factors to develop more inclusive and targeted healthcare financing policies. Though derived from a separate study, these behavioral insights underscore the importance of integrating both actuarial modeling and field-based socioeconomic assessments in designing equitable and effective health insurance strategies.

Additional survey findings further reinforce the need to bridge actuarial forecasting with community realities. For example, the survey revealed that 59.1% of respondents delayed or skipped medical treatment due to financial constraints, despite the existence of both public and private healthcare providers in the region. This behavioral gap in healthcare utilization contrasts with actuarial models that typically reflect only those who are already enrolled in and actively using insurance-based services.

Another critical dimension is insurance coverage disparity: while actuarial models assume scheme membership, the survey found that only 39.8% of households were enrolled in any form of health insurance, and coverage among rural females was as low as 1.5%, compared to 46.7% among urban males see Table 3. This sharp contrast highlights the risk of overestimating population-level healthcare access when relying on claims data alone. It also signals the need for targeted outreach programs and subsidized health plans tailored to rural women and other underserved groups.

Together, these complementary perspectives offer a more holistic understanding of the healthcare landscape in Northwestern Nigeria. While actuarial data quantifies disease-specific cost and utilization at scale, survey-based data sheds light on accessibility barriers, behavioral choices, financial vulnerability, and cultural nuances that actuarial models may not capture. Policymakers and insurance administrators can thus benefit from aligning actuarial precision with ground-level realities to design more equitable and responsive health financing systems.

Table 3: Citizen dwelling, gender and possession of health insurance in percentages (N=600).

Do you live in an Urban or Rural area?	What is your gender?	Does your household have any form of health insurance?	
		No	Yes
Rural	Female	20.2%	1.5%
	Male	59.1%	17.2%
Urban	Female	10.1%	3.5%
	Male	38.6%	46.7%
Total	Female	13.4%	2.9%
	Male	45.3%	36.9%

Source: Survey data

5.0 CONCLUSION

The study investigated the analyzed the healthcare expenditure for seven states in the northwestern regions of Nigeria and also computed the health care costs and utilisations rates of various classes of diseases using a health insurance claims data. Healthcare expenditures in Nigeria's Northwestern states reveal significant disparities that place varying degrees of financial strain on their populations. While some states, like Jigawa and Kaduna, demonstrate a higher level of commitment to health spending, others, such as Katsina and Zamfara, lag behind. The challenge, from an actuarial perspective, lies in ensuring that health resources are pooled effectively, managed efficiently, and distributed equitably to improve access to care across the region. To address these disparities, there is a need for stronger policy frameworks, improved budgeting for health care, and the development of sustainable health financing mechanisms that prioritize equity and efficiency. By leveraging actuarial insights into health expenditure planning, Northwestern Nigeria can build a more resilient and equitable health care system that meets the needs of its growing population. The actuarial perspective on health care expenditures in Northwestern Nigeria highlights the need for a more balanced, sustainable approach to financing public health. While some states allocate significant portions of their budgets to health care, the overall funding remains insufficient to meet the needs of the population, especially in poorer and rural areas. To address this, a comprehensive, equity-driven approach to health financing is necessary, with an emphasis on risk pooling, cost-effective resource allocation, and long-term sustainability. Additionally, the development of a robust health insurance system at both state and national levels could help alleviate the financial burden on individuals while ensuring more equitable access to care. Actuarial models can play a key role in this process by forecasting the financial needs of the health sector, identifying inefficiencies, and recommending strategies for managing health care costs more effectively. Ultimately, improving health care expenditures and reducing the financial burden across Nigeria's Northwestern states requires a concerted effort by both the government and the private sector, backed by sound actuarial insights and a focus on equitable, sustainable health care for all.

Results from the access and utilisation survey indicate significant regional and gender-based differences in willingness to subscribe and pay for government-arranged health insurance. Males, especially in urban areas, show the highest interest in subscribing, while females, particularly in rural areas, exhibit low willingness to participate. There is a clear need for targeted interventions and policies that address these disparities, encourage female participation, and provide more education about the benefits of health insurance. By improving awareness and accessibility, government health insurance schemes can increase their coverage and ensure more equitable healthcare access across both urban and rural populations. Data from the survey shows a strong preference for private health insurance among males in both urban and rural areas, with urban males showing the highest willingness to subscribe. However, females—especially those living in rural areas—show very low interest, pointing to barriers such as income limitations, lack of information, or social factors that need to be addressed. Overall, the disparity in willingness between males and females suggests that tailored interventions and gender-sensitive policies are required to close the gap in private health insurance subscription, ultimately improving healthcare access for all populations. It was also revealed that there significant gender and geographic disparities in health insurance coverage in Nigeria, with males in urban areas being the most likely to have coverage, while **f**emales, particularly in rural areas, show alarmingly low rates of insurance coverage. These disparities underscore the need for targeted interventions to improve health insurance access for women, especially in rural regions. Efforts to address financial, informational, and social barriers to health insurance are crucial in ensuring equitable access to healthcare services across different demographic groups.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request**.**

ACKNOWLEDGMENTS

The research was supported by a grant from the Tertiary Education Trust Fund (TETFUND) through Federal University Dutse (IBR 2024). The authors appreciate this financial assistance**.**

REFERENCES

1) National Primary Health Care Development Agency (2022): Presentation on Basic Health Care Provision Fund (BHCPF).
2) Angell B., Sanuade O., Adetifa I.M.O. (2022): Population health outcomes in Nigeria compared with other West African countries, 1988-2019: a systematic analysis for the Global Burden of Disease Study. Lancet 2022; 399: 1117–29.
3) Abubakar I., Dalglish S., Angell B. (2022): The Lancet Nigeria Commission: investing in health and the future of the nation. Lancet 2022; 399: 1155–200.
4) Global Burden of Disease (2019): GBD Universal Health Coverage Collaborators. Measuring universal health coverage based on an index of effective coverage of health services in 203 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019.
5) National Health Insurance Scheme (2020): National Health Insurance Scheme Strategic Plan 2020-2020.
6) NHIA (2022): National Health Insurance Act, 2022. Federal Republic of Nigeria Official Gazette, No. 95, Vol. 109.
7) Basic Healthcare Provision Fund Guidelines for Administration, Disbursement, Monitoring and Fund Management. 8th October 2016.
8) Federal Government of Nigeria. Second National Strategic Health Development Plan, 2018-2022.
9) Ajilola L.A., Ojikutu R.K. and Adeleke I.A. (2019): Predicting community-based healthcare claims using International Classification of Primary Care Codes. J Risk Management and Insurance, 22 (1): 42-59.
10) Johncally A,O. and Adeleke I.A. (2020): Health insurance pricing model in Nigeria. Am J Economics and Business Management; 2020; 3(1): DOI 10.31150/ajebm.Vol3.Iss1.120.
11) Adeleke I.(2018): Developing a risk-adjusted capitation regime for Nigeria Health Insurance Scheme (NHIS). J Risk Management and Insurance, 22(2): 1-17.
12) Akinyemi M.I., Adeleke I. and Adedoyin C. (2018): Modelling Health Maintenance Organisation payments under the National Health Insurance Scheme in Nigeria. AU-eJIR, 3(1): 13-17
13) Adeleke, I.A., Dallah, H. and Ibiwoye, A. (2012). Evaluation of the capitation regime of Nigeria health insurance scheme. Journal of Academic Research, 4(1), 23 – 28.
http://www.who.int/healthinfo/global_burden_disease - Accessed 20/02/2025
14) Annette Oruss-Ustun, Colin Mathers, Carlos Corvalan, Alistair Woodward (2003), Assessment of disease burden at national and local levels, Environmental Burden of Disease, (1), WHO.
15) Hay SI, et al. Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life

expectancy (HALE) for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet 2017;390:1260-1344.

16) Akimgunola O., Sogunle T., Kareem Y., Egua L. (2024), Health-care Utilisation among Elderly People with Chronic Medical Conditions in a Secondary Health-care Center, Southwestern Nigeria, Nigerian Journal of Medicine, 33(1), 73-79.

There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (https://creativecommons.org/licenses/by-nc/4.0/), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.