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Original Research

Pattern and Outcome of Medical Admissions at the University of Uyo Teaching Hospital: A 5-Year Hospitalization Analysis.

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Abstract

Background: The pattern of hospital admission is necessary for proper planning and budgeting in health care. It also provides insights into the burden of disease in a particular community. Additionally, admission patterns also assist in reviewing the morbidity and mortality over the duration of the study and allow for proper planning and prevention of these occurrences.

Methodology: This is a five-year retrospective study of patients admitted to the medical wards. Patients' case notes were retrieved from the hospital's records department. Demographic data such as age, sex, occupation, and religion were extracted from the case notes. Clinical data such as diagnosis, date of admission and discharge, duration of stay, and cause of death were also extracted. Kaplan-Meier survival curves were plotted, and a multivariate Cox proportional hazards model was used to determine the independent predictors of mortality.

Results: A total of 2634 patient records were retrieved. The ages of patients ranged from 15 to 102 years, with a mean of 54.8 ± 16.5 years. There were more males 1374 (52.2%) against 1269(47.8%) females), p<0.001. Noncommunicable diseases (NCDs) accounted for 2286 (86.8%), with 348 (13.2%) being communicable diseases. Chronic kidney disease (CKD) 21.5%, acute kidney injury (5.0%), Stroke (19.9%), Heart failure (17.6%), and Diabetes (20.7%) were the leading NCDs. On the other hand, Tuberculosis (4.0%), and Pneumonia (1.4%), were the leading communicable diseases causing hospitalization. Older age groups \geq 60 years (p= 0.02), kidney disease, (p< 0.001). HIV. (p=0.01) were independently associated with mortality. **Conclusion:** The epidemiological transition to NCDs is well established in the adult population of Akwa

Ibom State. Older age, kidney diseases, stroke, and HIV infection were independent predictors of mortality.

Keywords: Medical Admission; Pattern; Communicable Diseases; Non-Communicable Disease; Outcomes.

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Introduction:

The pattern of hospital admission is necessary for proper planning and budgeting. It can also provide insight into the burden of disease in a particular community.[1] The prevalence of communicable diseases has traditionally been higher than that of non-communicable diseases (NCDs) in low and middle-income countries (LMICs). However, in the last decade, it has been observed that NCDs are gradually becoming more common in LMICs like ours.[2] This is referred to as epidemiologic transition. Tertiary hospitals such as the case study center offer a better reflection of the disease burden in society as they serve as the major referring centers for public and private health institutions. The admission pattern also assists in reviewing the morbidity and mortality over the duration of the study and allows for proper planning and prevention of these occurrences.[3]

The World Health Organization (WHO) had earlier predicted that by the year 2020, the causes of diseases and deaths in sub-Saharan Africa would undergo a significant transition towards NCDs and away from infectious diseases.[4-5] In recent years, NCDs, such as cardiovascular diseases (CVD), diabetes, chronic obstructive pulmonary disease (COPD), and cancers, have become an emerging pandemic globally with disproportionately higher rates in developing countries.[6] Almost half of all deaths in Asia are now attributable to NCDs, accounting for 47% of the global burden of disease.[6] Over 80% of cardiovascular and diabetes deaths,90% of COPD deaths, and two-thirds of all cancer deaths occur in developing countries.[7-8] This new trend may be attributable to improvements in healthcare and the consequent increase in the mean age of the population in developing countries. This shift could also be attributed to the increasing urbanization and westernization of these populations.[9]

In Nigeria and many sub-Saharan countries, epidemiological information on disease profiles is limited. However, a study on the pattern and outcomes of medical admission in a tertiary center in the rural community of Ekiti state revealed that NCDs were more common than communicable diseases, with a prevalence rate of 68.4% and 31.6%, respectively.[10] They also found that most of the patients admitted were elderly, and cardiovascular diseases accounted for the majority of the deaths (33%). Similarly, cardiovascular diseases were particularly common among elderly patients in a retrospective study of medical patients admitted between 2001 to 2004 at the University of llorin Teaching Hospital.[10] A study at the Federal Medical Center, Asaba, revealed that NCDs are becoming more prevalent compared to communicable diseases in Nigeria.[11] An earlier study analyzed the pattern and outcomes of cardiovascular diseases. This may no longer represent the current trend in admission and it was limited to cardiovascular diseases. This highlights the need for this study, which aims to provide updated and comprehensive data to inform evidence-based policies and targeted interventions for improving local healthcare delivery.

Methodology

This is a five-year retrospective descriptive-analytical study of patients admitted to the medical wards of the University of Uyo Teaching Hospital from November 2018 to October 2023. There are five medical wards at the University of Uyo Teaching Hospital: three male wards and two female wards, each with 14 beds, giving a total of 70bed spaces.

The University of Uyo Teaching Hospital is in Uyo, the capital of Akwa Ibom State, one of the states in the oil-rich Niger Delta region of Nigeria. It serves as the primary tertiary hospital for the state, which has an estimated population of over 5 million, according to Akwa Ibom State's 2022 projected population figures.[13]

Patients' case notes were retrieved from the hospital's records department. Demographic data such as age, sex, occupation, and religion were extracted from the case notes. In addition, clinical data such as diagnosis, date of admission and discharge, duration of stay, reason for discharge, cause of death for those who died, and reasons for signing against medical advice were also retrieved. Patients' investigation results were also retrieved. Mortality was defined as cessation of life during the period of admission.

Inclusion criteria:

All patients admitted to medical wards during the period were included in the study.

Exclusion criteria:

Patients with unclear or no definitive diagnosis.

Patients with missing or incomplete data.

Data handling: Data was analyzed using SPSS version 23. Continuous variables were summarized as mean and standard deviation, while categorical variables were summarized as frequencies and percentages. The chi-square test was used to test for association between categorical variables. The proportion of annual medical hospitalizations was calculated by dividing the number of medical admissions by the total number of hospital admissions in the same period. A line graph was used to depict the annual variations in medical admissions from November 2018 to October 2023 for the whole cohort and for specific aetiologic subgroups within the cohort. The Cochran-Armitage test was used to investigate the presence of an increasing trend in the percentage of medical admissions during this period.

The survival experience of different patient groups was documented using the Kaplan-Meier curves, and the curves were compared using the log-rank test. A multivariate Cox proportional hazards model was used to identify the independent predictors of mortality. The global test was used to assess for potential violation of the proportional hazards assumption. P-values less than 0.05 were deemed to be statistically significant.

Ethical issues: Ethical clearance was sought and obtained from the University of Uyo Teaching Hospital's ethical committee, with assigned numbers UUTH NHREC Reg. Number – NHREC/24/06/22/UUTH and HREC Protocol number – UUTH/AD/S/96/VOL.XXI/854.

Results

A total of 2634 patient records were retrieved. The ages of patients ranged from 15 to 102 years, with a mean of 54.8 ± 16.5 years. There were more males 1374 (52.2%) versus1269 (47.8%) females) (p=0.001). In all, 1707 (64.8%) were married while 41 (1.6%) were divorced. NCDs accounted for 2286 (86.8%), while communicable diseases accounted for 348(13.2%) of the hospitalizations during this period (Table 1). It also showed the distribution of different types of diseases. Chronic kidney disease (CKD) 567(21.5%), Acute kidney injury (AKI) 131 (5.0%), Stroke 544 (19.9%), Heart failure 464 (17.6%), Diabetes 544 (20.7%), Tuberculosis 106 (4.0%), Pneumonia 37 (1.4%), Upper GI bleeding 40 (1.5%), HIV encephalopathy 61(2.3%), were among the common causes for hospitalization.

Variable	Frequency	Percentages	p-value
Age (in years)			
Means: 54.82 ±16.50			
Minimum –Maximum 15-102			
Sex			0.001
Males	1374	52.2	
Females	1260	47.8	
Marital Status			
Single	441	16.7	
Married	1707	64.8	
Widow	388	14.7	
Widower	57	2.2	
Divorced	41	1.6	
Clinical characteristics			
Communicable	348	13.2	
Non-communicable	2286	86.8	
CKD	567	21.5	
AKI	131	5.0	
Stroke	524	19.9	
Heart failure	464	17.6	
Diabetes	544	20.7	
Tuberculosis	106	4.0	
Chronic Liver Diseases	58	2.2	
Upper GI bleeding	40	1.5	
Seizure disorder	34	1.3	
COPD	34	1.3	
Nephrotic syndrome	16	0.6	
HIV Encephalopathy	61	2.3	
Hypertensive Heart Disease	85	3.2	
Others	172	6.5	

Table I: Sociodemographic and Clinical Characteristics

CKD= chronic kidney disease; AKI= acute kidney injury; COPD= chronic obstructive pulmonary disease.

Figure 1 shows the admission trend between November 2018 and October 2023, with a slight reduction in 2021. There was an increasing hospitalization trend with a temporary dip in 2021. The Cochrane Armitage trend analysis showed a p-value of 0.001, which shows that the rise in mortality rates is not due to chance, implying that major factors are responsible, which could include either patient severity, healthcare delivery, or external factors over time



Figure 1: Admission trend between November 2018 and October 2023

Figure 2 also showed an increasing trend in admission of the six most common causes of hospital admission: chronic kidney disease, acute kidney injury, stroke, diabetes mellitus, heart failure, and tuberculosis. Tuberculosis, however, showed a slight reduction in 2023 compared to other diseases.



Figure 2: Trend in admission of the six most common causes of hospital admission 2018 to 2023

Figure 3 shows the outcomes of admitted patients. 1620 (61.5%) were discharged, 603 (22.9%) left Against medical advice (LAMA), and 447 (17. %) died



Figure 3: Outcome in patients admitted during the study period

Table 2: Reasons Patients	S Left Against Medical	Advice (n=603)
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Reasons	Frequency	Percentage (%)
Family reason	4	0.66
Financial constraint	512	84.90
Home treatment	15	2.5
No caregiver	6	0.99
No improvement	21	3.45
Non-functioning dialysis machine	2	0.33
Personal reason	21	3.45
Poor attitude of medical staff	1	0.2
Strike	10	1.65
To another hospital	8	1.31
To church	3	0.50

The top 3 reasons for leaving medical advice were financial constraint (512;84.9%), no improvement in medical condition (21;3.45%), and personal reasons (21;3.45%).

	Outo	ome	Total n (%)	P-Value
Variables	Alive n (%)	Dead n (%)		
CLUD				
CKD				
No	1733(65.8)	332(12.6)	2065(78.4)	0.04*
Yes	454(17.3)	115(4.4)	567(21.5)	
AKI				
No	2097(79.6)	406 (15.4)	2503(95.0)	0.001*
Yes	90(3.4)	41(1.6)	131(5.0)	
Stroke				
No	1787(67.8)	323(12.3)	2110(80.1)	0.001*
Yes	400(15.2)	124(4.7)	524(19.9)	
Heart Failure				
No	1794(68.1)	376(14.3)	2170(82.4)	0.291
Yes	393(14.9)	71(2.7)	464(17.6)	
Diabetes				
No	1719 (65.3)	371 (14.1)	2090 (79.3)	0.06
Yes	468 (17.8)	76 (2.9)	544 (20.7)	
HIV Encephalopathy				
No	2150(81.6)	523(16.1)	2573(97.7)	0.001*
Yes	37(1.4)	24(0.9)	61(2.3)	
Tetanus				
No	2185(83.0)	443(16.8)	2628(99.8)	0.001*
Yes	2(0.1)	4(0.2)	6(0.2)	
Cancer				
No	2163(82.1)	428(16.2)	2591(98.4)	0.001*
Yes	24(0.9)	19(0.7)	43(1.6)	
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Table 3 shows the association between different diseases with death.

*Statistically significant.

Chronic kidney disease (CKD) p=0.04, Acute kidney injury (AKI) p<0.001, stroke p<0.001, HIV encephalopathy p<0.001, tetanus p<0.001 and cancers p<0.001 showed a statistically significant association with death an as outcome. Heart failure p=0.291, and diabetes mellitus p=0.06 were, however, not statistically significantly associated with death.

The determinants of survival over time are shown in Figure 4. Survival probability decreases with increasing age. Older age groups (≥ 60 years) have lower survival probabilities (p= 0.02). Having kidney disease, whether acute kidney injury or chronic kidney disease, was associated with worse survival (p<0.001). Having HIV infection was associated with worse survival compared with those who were negative (p=0.01). However, those with diabetes had a better survival than those who did not have diabetes (p=0.01). Communicable and non-communicable diseases had the same survival rate, and gender did not have any significant influence on survival.

Cox regression analysis of the likelihood of death is shown in Table 4. For every one-year increase in age the risk of dying while on admission increases by 1.2% (p<0.001),95% CI(1.00, 1.02).



Figure 4. Kaplan-Meier Survival Curves demonstrate different factors that influence survival over time.

Variables	Hazard ratio	p-value	95 % CI	
Age	1.01	0.000	1.00	1.02
Sex	0.95	0.609	0.78	1.15
Diabetes	0.78	0.063	0.60	1.01
Communicable diseases	0.95	0.779	0.67	1.35
Kidney diseases	1.67	0.000	1.35	2.06
HIV	1.60	0.009	1.12	2.28
Stroke	1.66	0.000	1.29	2.12
Heart failure	1.101747	0.481	0.84	1.44

Table 4. Cox regression analysis of the likelihood of death

Having kidney disease, whether acute kidney injury or chronic kidney increased the death rate by 67%. (p <0.001).95% CI (1.35, 2.06). Having HIV infection was associated with a 60% increase in hazard, (p=0.009), 95% CI (1.12, 2.28). Also having a stroke was associated with a 66% increase in hazard (p <0.001) 95% CI (1.29-2.12). Gender, communicable diseases, and heart failure were not associated with increased risk of dying. Having diabetes appears protective compared with non-diabetics.

The mortality rate (measured in person-days of follow-up) for different sub-populations within the cohort is shown in Table 5

Patient Subgroup	Mortality Rate (per 100 person-days)
Stroke	1.81
CKD	1.66
HIV	1.72
DM	0.94
Males	1.27
Females	1.26
Age (years)	
< 20	1.22
20-39	1.00
40 - 59	1.19
≥ 60	1.49
Heart Failure	1.26

 Table 5: Mortality Rates for Select Patient Subgroups

The median survival time for a stroke, kidney disease, HIV, and heart failure was 50, 59, 44, and 48 days, respectively. Stroke patients experience the highest mortality rate followed by those with HIV and CKD. While Diabetes patients had the lowest mortality rate. Mortality increased with age, particularly in individuals aged ≥ 60 years. There are no gender differences in mortality.

Discussion:

This study revealed a high prevalence of NCDs among the patients admitted to medical wards in the University of Uyo Teaching Hospital between November 2018 and October 2023. NCDs accounted for 86.8%, which was higher than 60.7% in a study by Adedapo.[14] This trend contradicts the earlier belief that communicable diseases were more common in resource-poor economies [11]. The shift may be due to changes from traditional lifestyles and diets to more Westernized lifestyles characterized by increased consumption of processed foods high in fats, salt, and sugar.[15] These changes in lifestyle, including smoking, unhealthy diets, and obesity, heighten the risk of non-communicable diseases like diabetes, hypertension, chronic kidney disease, stroke, and cancers. This shift may also be attributed to reductions in infections due to improved hygiene, which previously contributed to the higher prevalence of communicable diseases in resource-poor economies as well as increased availability of effective antibiotics for treating various communicable diseases. Additionally, the rise in aging populations has been suggested as a reason for this shift from communicable to non-communicable diseases, as more people are now living longer than before.[10,16,17] The mean patient age in this study was $54(\pm 16.5)$ years, with a maximum of 102 years and a minimum of 15 years. This is consistent with the findings of Ogunmola et al.[16], whose study population ranged from 16 to 120 years, with a mean of 56.1 (± 18.8

years). It is also consistent with the Nigerian life expectancy which is between 55 and 56 years.[18] This falls short of what is observed in many developed countries.[19] Kaplan-Meier and Cox regression analyses revealed that increasing age was associated with an increased risk of death, particularly in individuals 60 years and above. Additionally, elderly individuals are at greater risk of multiple health challenges such as diabetes, hypertension, stroke, and obesity.[20-21] More males, 1374 (52.2%), than females 1260 (47.8%) were admitted during the review period. This is also consistent with Ogunmola et al.[16], Odenigbo [11], Ogun[22], and Okunola [23], who all reported more male admissions compared to females. It is generally believed in Nigeria that men, often regarded as the primary breadwinners of the family, tend to be overworked. It may also be that women are more likely to seek medical care on time and are often treated on an outpatient basis without necessarily requiring admissions, while their male counterparts usually wait until their health has significantly deteriorated before seeking care. Also, men are more involved in risky lifestyles such as smoking and drinking, which are traditional modifiable risk factors for cardiovascular diseases.[24]

The study further revealed that chronic kidney disease, cerebrovascular accidents, diabetes, acute kidney injury, heart failure, and tuberculosis were the leading reasons for admission. This further highlights the rising prevalence of cardiovascular diseases, reflecting a shift from communicable to non-communicable diseases.[2] The observed low prevalence of ischemic heart disease despite the high prevalence of non-communicable diseases, may be due to a low index of suspicion. It may also be because patients with ischemic heart disease are usually admitted to the intensive care unit. However, this study only considered patients admitted to medical wards.

Measures to cope with the burden of non-communicable diseases should include, among others, modification of lifestyle such as reducing alcohol consumption, cessation of smoking, and reduction of excessive consumption of fats, sugar, and salty food. Exercise, weight reduction, and consumption of fruits and vegetables should be encouraged.[25,26]

This study shows that 61% of admitted patients were discharged. This was lower than the findings in a rural teaching hospital in Southern Nigeria and a study in Ado-Ekiti, where they found 86.7% and 71.1%, respectively.[27,28] Although these disparities cannot be explained, it may be because of the admission pattern and time of presentation, as most of our patients presented late for treatment.

We observed that 22% left against medical advice, a finding that exceeds those reported in previous studies in Nigeria.[11,27,29] The most common reason for this decision was financial constraints. This corroborates the fact that many Nigerians cannot afford the cost of health care as only about 10% of the population have access to health insurance coverage.[29] Most of the time patients have to pay out of pocket. Therefore, the sustainability of treatment for these NCDs is often overwhelming, especially when considering that the minimum wage for Nigerian federal workers has been $\aleph30,000.00$ (\$18.86) for a long period but increased to $\aleph70,000.00$ (\$44.01) in May-01,2024.[30] As a result it is often difficult for patients to sustain certain modalities of treatment, such as hemodialysis and drugs for diabetes and hypertension. [31,32] This is in contrast to CDs like HIV and TB, which have free drugs for patients. Therefore, instead of staying in the hospital and accumulating medical bills, patients often prefer to sign out against medical advice.

Therefore, there is an urgent need for governments to ensure universal health coverage for everyone at all levels in the country to enroll citizens in the formal and informal sectors in insurance schemes. This will aid affordability and sustainable health, with a significant reduction in morbidity and mortality. Private sector participation in providing health insurance for their workers is also very important.

It was also observed that 17% of the admitted patients died during admission. This finding is consistent with a study in Uganda, where a mortality rate of 17.1% was also reported.[33] Our finding is lower than previous studies in Nigeria which reported mortality rates of 18.9% and 21.8%.[34] However, this rate was higher than those reported in a southern Nigerian hospital and an institution in Eastern Sudan, where the mortality rates of 4.5% and 9.3% were reported respectively[35- 36] Contributing factors to the higher mortality rate may include, among others, delayed presentation, as many patients typically present late in hospitals after seeking traditional medicine, taking dietary supplements instead of conventional drugs, and pursue of spiritual solutions to well-known medical conditions [37-38]

Chronic kidney disease, cerebrovascular accidents, diabetes, acute kidney injury (AKI), heart failure, HIV encephalopathy, tetanus, and cancers were the leading causes of death. Most of these conditions, except for HIV encephalopathy and tetanus, were non-communicable diseases (NCDs). Several studies have identified non-communicable diseases as significant causes of morbidity and mortality among hospitalized patients.[16,35]

The study noted a lower survival rate among those with kidney diseases (whether CKD or AKI), stroke, and HIV-related diseases, in contrast, patients admitted with diabetes had a better survival rate over time. Those admitted with Heart failure did not experience a significant impact on survival over time. The poor survival rate of patients with CKD may be due to factors such as late presentation and inability to afford initial dialysis or sustain dialysis sessions because of cost availability issues. These challenges have been noted in other Nigerian studies.[31,39,40]. Also, the low survival rate in patients with AKI may primarily result from the severity of the condition itself, or it could have been a result of the inability to afford dialysis for those who required it, as observed in a study conducted in Lagos.[41] The low survival rate among patients admitted with stroke may be attributed to factors such as late presentation and financial barriers to essential investigations like cranial computerized tomography, which is a crucial investigation that guides thrombolysis in those with ischemic stroke. [42] Studies have shown that patients with acute stroke admitted directly to a stroke unit tend to have better survival outcomes than those admitted to the general ward.[43,44] In this study, patients were admitted into the general ward, which may have contributed to their low survival rate over time. Therefore, to improve survival outcomes for stroke patients, it is imperative to activate the hospitals already established dedicated stroke unit for admitting all acute stroke patients.

Survival was better for those admitted due to diabetes. This may be due to many of these patients presenting with acute complications of diabetes, such as diabetic ketoacidosis (DKA), hyperosmolar hyperglycemia (HHS), or hypoglycemia. These conditions are considered medical emergencies and are often managed more effectively than other chronic conditions. Additionally, the cost of managing these conditions is generally more affordable compared to chronic medical conditions like CKD and AKI, which require expensive treatment such as dialysis, usually paid for by patients and not fully covered by health insurance.

Conclusion: This study revealed a high burden of NCDs, reflecting an epidemiological shift in disease patterns from communicable to non-communicable diseases in Nigeria, a low- and middle-income economy. Chronic Kidney, Stroke, and AKI were associated with poor survival over time, while diabetes mellitus had a better survival rate over time.

Additionally, the study revealed limited financial resources as a major factor for patients leaving the hospital against medical advice, highlighting the economic challenges many patients face in accessing and sustaining healthcare in this region.

Recommendation: These findings called for concerted efforts, individually and collectively, to help check this cardiovascular epidemic. The government at all levels should expand the health insurance scheme to

include all citizens, both in the formal and informal sectors and in addition, ensure that the management of NCDs is covered in the insurance programs.

Limitation: This was a retrospective study, and data extraction was hindered by the fact that patients' case notes were manually filed. Not all patients' case notes were found and some of the case notes that were retrieved had incomplete data as some of the pages were missing.

Conflicts of interest: All authors declare no conflicts of interest.

References:

- 1. Chijioke A, Kolo P. Mortality pattern at the adult medical wards of a teaching hospital in subsaharan Africa. Int J Trop Med 2009;4:27–31.
- 2. Bollyky TJ, Templin T, Cohen M, Dieleman JL. Lower-Income Countries That Face The Most Rapid Shift In Noncommunicable Disease Burden Are Also The Least Prepared. Health Aff Proj Hope 2017;36(11):1866–75.
- 3. Das BR, Medhi AH, Das N, Kakoti G, Nath G, Sarkar AH. Admission Pattern and Outcome of Patients Attending a Tertiary Care Hospital. Int J Curr Res Acad Rev 2016;4(4):21–8.
- 4. Mathers CD, Loncar D. Projections of Global Mortality and Burden of Disease from 2002 to 2030. PLoS Med 2006;3(11):e442.
- Abegunde DO, Mathers CD, Adam T, Ortegon M, Strong K. The burden and costs of chronic diseases in low-income and middle-income countries. Lancet Lond Engl 2007;370(9603):1929– 38.
- 6. Global action plan for the prevention and control of noncommunicable diseases 2013-2020 [Internet]. [cited 2024 Aug 20];Available from: https://www.who.int/publications/i/item/9789241506236
- 7. Terzic A, Waldman S. Chronic Diseases: The Emerging Pandemic. Clin Transl Sci 2011;4(3):225-6.
- 8. Kishore SP, Vedanthan R, Fuster V. Promoting global cardiovascular health ensuring access to essential cardiovascular medicines in low- and middle-income countries. J Am Coll Cardiol 2011;57(20):1980–7.
- 9. Olawuyi AT, Adeoye IA. The prevalence and associated factors of non-communicable disease risk factors among civil servants in Ibadan, Nigeria. PLoS ONE 2018;13(9):e0203587.
- 10. Sanya E, Akande T, Opadijo O, Olarinoye J, Bojuwoye B. Pattern and outcome of medical admission of elderly patients seen at University of Ilorin Teaching Hospital, Ilorin. Afr J Med Med Sci 2008;37:375–81.
- 11. Odenigbo CU, Oguejiofor OC. Pattern of medical admissions at the Federal Medical Centre, Asaba-a two year review. Niger J Clin Pract 2009;12(4):395–7.
- 12. Ansa VO, Ekott JU, Bassey EO. Profile and Outcome of Cardiovascular Admissions at the University of Uyo Teaching Hospital, Uyo--a Five Year Review. Niger J Clin Pract 2008;11(1):22–4.

- 13. About Akwa Ibom Akwa Ibom State Government [Internet]. 2023 [cited 2024 Sep 3];Available from: https://akwaibomstate.gov.ng/about-akwa-ibom/, https://akwaibomstate.gov.ng/about-akwa-ibom/
- 14. Adedapo ADA. Morbidity and mortality patterns of medical admissions in a Nigerian secondary health care hospital. Afr J Med Med Sci 2012;41(1):13–20.
- 15. Non-communicable diseases (NCDs) in developing countries: a symposium report PubMed [Internet]. [cited 2024 Sep 2];Available from: https://pubmed.ncbi.nlm.nih.gov/25498459/
- 16. Ogunmola O, Oladosu O. Pattern and outcome of admissions in the medical wards of a tertiary health center in a rural community of Ekiti state, Nigeria. Ann Afr Med 2014;13(4):195.
- 17. Akanji BO, Ogunniyi A, Baiyewu O. Healthcare for older persons, a country profile: Nigeria. J Am Geriatr Soc 2002;50(7):1289–92.
- 18. Nigeria Life Expectancy 1950-2025 [Internet]. [cited 2025 Jan 7]; Available from: https://www.macrotrends.net/global-metrics/countries/nga/nigeria/life-expectancy
- 19. Wang H, Naghavi M, Allen C, Barber RM, Bhutta ZA, Carter A, et al. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet 2016;388(10053):1459–544.
- 20. Chobe M, Chobe S, Dayama S, Singh A, Metri K, Basa JR, et al. Prevalence of Non-Communicable Diseases and Its Associated Factors Among Urban Elderly of Six Indian States. Cureus 14(10):e30123.
- 21. Gyasi RM, Phillips DR. Aging and the Rising Burden of Noncommunicable Diseases in Sub-Saharan Africa and other Low- and Middle-Income Countries: A Call for Holistic Action. The Gerontologist 2020;60(5):806–11.
- 22. Ogun SA, Adelowo OO, Familoni OB, Jaiyesimi AE, Fakoya EA. Pattern and outcome of medical admissions at the Ogun State University Teaching Hospital, Sagamu--a three year review. West Afr J Med 2000;19(4):304–8.
- 23. Okunola OO, Akintunde AA, Akinwusi PO. Some emerging issues in medical admission pattern in the tropics. Niger J Clin Pract 2012;15(1):51.
- 24. Adeloye D, Auta A, Fawibe A, Gadanya M, Ezeigwe N, Mpazanje RG, et al. Current prevalence pattern of tobacco smoking in Nigeria: a systematic review and meta-analysis. BMC Public Health 2019;19(1):1719.
- 25. Budreviciute A, Damiati S, Sabir DK, Onder K, Schuller-Goetzburg P, Plakys G, et al. Management and Prevention Strategies for Non-communicable Diseases (NCDs) and Their Risk Factors. Front Public Health 2020;8:574111.
- 26. Arena R, Guazzi M, Lianov L, Whitsel L, Berra K, Lavie CJ, et al. Healthy lifestyle interventions to combat noncommunicable disease—a novel nonhierarchical connectivity model for key stakeholders: a policy statement from the American Heart Association, European Society of Cardiology, European Association for Cardiovascular Prevention and Rehabilitation, and American College of Preventive Medicine. Eur Heart J 2015;36(31):2097–109.

- 27. Adeoti AO, Ajayi EA, Ajayi AO, Dada SA, Fadare JO, Akolawole M, et al. Pattern and Outcome of Medical Admissions in Ekiti State University Teaching Hospital, Ado-Ekiti- A 5 Year Review. Am J Med Med Sci 2015;5(2):92–8.
- 28. Emorinken A, Dic-Ijiewere MO, Olugbemide O, Atiri A, Oiwoh SO, Akpasubi BO, et al. Medical Admissions in a Rural Teaching Hospital in Southern Nigeria: A Retrospective Review. Niger Med J 2022;63(5):364–72.
- 29. Onwujekwe O, Hanson K, Uzochukwu B. Examining Inequities in Incidence of Catastrophic Health Expenditures on Different Healthcare Services and Health Facilities in Nigeria. PLoS ONE 2012;7(7):e40811.
- 30. Nigeria National Minimum Wage [Internet]. [cited 2025 Jan 7]; Available from: https://tradingeconomics.com/nigeria/minimum-wages
- 31. Akpan EE, Ekrikpo UE, Effa EE, Udo AIA, Umoh VA. Demographics, Cost, and Sustainability of Haemodialysis among End-Stage Kidney Disease Patients in Southern Nigeria: A Single-Center Study. Niger Med J J Niger Med Assoc 2020;61(6):307–11.
- 32. Bello BT, Raji YR, Sanusi I, Braimoh RW, Amira OC, Mabayoje OM. Challenges of providing maintenance hemodialysis in a resource poor country: Experience from a single teaching hospital in Lagos, Southwest Nigeria. Hemodial Int Int Symp Home Hemodial 2013;17(3):427–33.
- 33. Kalyesubula R, Mutyaba I, Rabin T, Andia-Biraro I, Alupo P, Kimuli I, Nabirye S, Kagimu M, Mayanja-Kizza H, Rastegar A, Kamya MR. Trends of admissions and case fatality rates among medical in-patients at a tertiary hospital in Uganda; A four-year retrospective study. PLoS One. 2019 May 14;14(5):e0216060. doi: 10.1371/journal.pone.0216060.
- 34. Abdulrasheed MM, Nuhu MK. A Review of Medical Admissions at the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria. Niger Med J J Niger Med Assoc 64(1):87–94.
- 35. Omar SM, Osman OS, Gasim GI, Adam I. Pattern and Trends in Adult Hospitalization/Admission and Mortality Among Medical Ward Inpatients at Gadarif Hospital in Eastern Sudan: A Four-Year Retrospective Study. Int J Gen Med 2022;15:5879–89.
- 36. Okoroiwu HU, Uchendu KI, Essien RA. Causes of morbidity and mortality among patients admitted in a tertiary hospital in southern Nigeria: A 6-year evaluation. PLOS ONE 2020;15(8):e0237313.
- 37. Peprah P, Gyasi RM, Adjei POW, Agyemang-Duah W, Abalo EM, Kotei JNA. Religion and Health: exploration of attitudes and health perceptions of faith healing users in urban Ghana. BMC Public Health 2018;18(1):1358.
- 38. Bamidele JO, Adebimpe WO, Oladele EA. Knowledge, Attitude and Use of Alternative Medical Therapy Amongst Urban Residents of Osun State, Southwestern Nigeria. Afr J Tradit Complement Altern Med 2009;6(3):281–8.
- 39. Adejumo OA, Akinbodewa AA, Okaka EI, Alli OE, Ibukun IF. Chronic kidney disease in Nigeria: Late presentation is still the norm. Niger Med J J Niger Med Assoc 2016;57(3):185–9.
- 40. Adejumo OA, Akinbodewa AA, Ogunleye A, Enikuomehin AC, Lawal OM. Cost Implication of Inpatient Care of Chronic Kidney Disease Patients in a Tertiary Hospital in Southwest Nigeria. Saudi J Kidney Dis Transplant 2020;31(1):209.

- 41. Bello BT, Busari AA, Amira CO, Raji YR, Braimoh RW. Acute kidney injury in Lagos: Pattern, outcomes, and predictors of in-hospital mortality. Niger J Clin Pract 2017;20(2):194.
- 42. von Kummer R, Allen KL, Holle R, Bozzao L, Bastianello S, Manelfe C, et al. Acute stroke: usefulness of early CT findings before thrombolytic therapy. Radiology 1997;205(2):327–33.
- 43. Rocha MSG, Almeida ACF, Abath Neto O, Porto MPR, Brucki SMD. Impact of stroke unit in a public hospital on length of hospitalization and rate of early mortality of ischemic stroke patients. Arq Neuropsiquiatr 2013;71(10):774–9.
- 44. Organised inpatient (stroke unit) care for stroke. Cochrane Database Syst Rev 2013;2013(9):CD000197.