

Original Article

Review of medical admissions in a Tertiary Hospital in North-Eastern Nigeria: a retrospective study.

Ibrahim A, Galtimari,^{1,2} Musa M. Baba,³ Mustapha Lawan,^{1,4} Zakiyyah Zakariyya,^{1,2} Mohammed S. Umar,⁵ Mohammed Mustapha,⁶ Jamila A. Idrisa,^{1,7} Mohammad M. Sulaiman,^{1,4} Ibrahim Ummate,^{1,4} Bukar Bakki,^{1,8} Faruk Buba,^{1,2} Mohammed A. Talle,^{1,2} Haruna Yusuph.^{1,6}

¹Department of Medicine, Faculty of Clinical Sciences, College of Medical Sciences, University of Maiduguri, Nigeria.

² Cardiology Unit, Department of Internal Medicine, University of Maiduguri Teaching Hospital, Nigeria.

³Department of Medicine, Faculty of Clinical Sciences, College of Medical Sciences, Yobe State University, Damaturu, Nigeria.

⁴Nephrology Unit, Department of Internal Medicine, University of Maiduguri Teaching Hospital, Nigeria.

⁵Gastroenterology Unit, Department of Internal Medicine, University of Maiduguri Teaching Hospital, Nigeria.

⁶Infectious Disease Unit, Department of Internal Medicine, University of Maiduguri Teaching Hospital, Nigeria.

⁷Dermatology Unit, Department of Internal Medicine, University of Maiduguri Teaching Hospital, Nigeria.

⁸ Pulmonology Unit, Department of Internal Medicine, University of Maiduguri Teaching Hospital, Nigeria.

Correspondence to: Dr. Ibrahim Abubakar Galtimari, Cardiology Unit, Department of Medicine, Faculty of Clinical Sciences, University of Maiduguri, Nigeria. Email: dr.galtimari@gmail.com. Phone: +2347039323058

Abstract

Background: Medical admission patterns provide valuable insight into prevailing disease burdens and healthcare system performance, particularly in low- and middle-income countries undergoing epidemiological transition. Data from North-Eastern Nigeria remains limited despite the region's unique demographic and health challenges. **Aims and Objectives:** To evaluate the pattern and spectrum of medical admissions at the University of Maiduguri Teaching Hospital (UMTH), North-Eastern Nigeria. **Methodology:** This was a retrospective descriptive review of medical admissions at UMTH over 18 months (October 2018–March 2020). Patients aged ≥ 12 years admitted to the medical wards were included. Sociodemographic data, admitting subspecialty, disease categories, and specific diagnoses were extracted from hospital records. Data were analysed using SPSS version 23 and presented as frequencies, percentages, medians, and ranges. **Results:** Of 3,076 medical admissions recorded, 2,974 patients were analysed. The sex distribution was nearly equal (49.4% males, 50.6% females), with a median age of 46 years (range 12–110). Most admissions occurred amongst patients aged 31–60 years. Admission rates peaked in the last quarter of 2019 and then declined sharply in early 2020. Nephrology accounted for the largest proportion of admissions (44%), followed by cardiology (11%) and Neurology (10%). Renal disorders were the leading disease category (47.1%), predominantly chronic kidney disease, with hypertensive nephropathy as the most common aetiology (51.7%). Cardiovascular diseases (11.4%) were mainly hypertensive heart disease with heart failure, while stroke accounted for nearly half of neurological admissions. Infectious diseases constituted 8.2% of admissions, with malaria, tuberculosis, and HIV infection being the most frequent. **Conclusion:** Medical admissions at UMTH are dominated by non-communicable diseases, particularly hypertension-related renal and cardiovascular conditions, affecting predominantly middle-aged adults.

Keywords: Medical admission, Nigeria, Northeastern, Retrospective study

Introduction

Emergency medical admissions constitute a major component of inpatient care in tertiary health hospitals. This would provide critical insight into the prevailing disease burden, health-seeking behaviour, and effectiveness of preventive medicine within a

population. In low- and middle-income countries, particularly in sub-Saharan Africa, the pattern of medical admissions is shaped by a complex interplay of communicable diseases, rising non-communicable diseases, limited access to early care, and

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socioeconomic challenges.^{1,2} Understanding these patterns is important for evidence-based health planning, the optimal allocation of scarce resources, manpower training and development, and the creation of targeted preventive and therapeutic interventions.

Nigeria is currently experiencing a dual burden of disease, with infectious diseases remaining prevalent alongside a rapidly increasing incidence of non-communicable conditions such as hypertension, chronic kidney disease, cardiovascular disease, and metabolic disorders. These trends are often reflected in hospital admission profiles, especially in tertiary centres that serve as referral hubs for large catchment populations.^{3,4} However, regional variations exist due to differences in demographics, environmental factors, cultural practices, and healthcare infrastructure. Data from North-Eastern Nigeria remains relatively limited, despite the region's unique health challenges due to the growing population of internally displaced Persons (IDP) in Maiduguri as a result of insurgency.

In these situations, a systematic evaluation of medical admissions by age, sex, sub-speciality, disease category, and specific diagnoses can therefore provide valuable baseline information. Such data are useful not only for clinicians and hospital administrators but also for policymakers seeking to strengthen health systems and prioritise interventions aimed at reducing morbidity and mortality. Therefore, this study aimed to evaluate the pattern and spectrum of medical admissions at the University of Maiduguri Teaching Hospital, North-Eastern Nigeria.

Materials and Methods

Study Design

This study was a retrospective descriptive review of medical admissions conducted at the University of Maiduguri Teaching Hospital (UMTH), Maiduguri, Borno State, Nigeria. The UMTH is a major tertiary referral centre in North-Eastern Nigeria. The hospital provides specialist services across multiple medical subspecialties, including Nephrology, Cardiology, Neurology, Endocrinology, Infectious Diseases, Gastroenterology, Pulmonology, Rheumatology, and Dermatology.

Study Population:

The study population comprised all patients admitted into the medical wards of UMTH over 18 months, from October 2018 to March 2020. Patients aged 12 years and above were eligible for inclusion. A total of 3,076 medical admissions were recorded during the

study period. However, 102 case records were excluded due to incomplete or missing essential data, leaving 2,974 patients for final analysis.

Ethical approval

Ethical approval for the study was obtained from the Health Research Ethics Committee of the University of Maiduguri Teaching Hospital. As this was a retrospective review of existing records, informed consent from individual patients was waived. Patient confidentiality was strictly maintained by anonymising all data and ensuring that no identifying information was included in the analysis or reporting.

Data Collection

Data were obtained retrospectively from hospital admission registers, morning review records, and individual patient case files maintained by the medical records department. A structured data extraction proforma was used to collect relevant information, including sociodemographic characteristics (age and sex), date and month of admission, admitting medical sub-specialty, primary diagnosis, and, where applicable, specific aetiologies of disease. Diagnoses were based on documented clinical assessments supported by laboratory investigations, imaging studies, and other relevant diagnostic procedures, as recorded by the managing physicians. Patients with multiple diagnoses were classified according to the principal diagnosis responsible for the last documented admission.

Disease Classification

Medical conditions were grouped into major disease categories based on organ system involvement, including renal, cardiovascular, neurological, metabolic/endocrine, infectious disease, gastrointestinal, pulmonary, rheumatology, and dermatology. Further sub-classification was done for major disease groups, particularly chronic kidney disease, cardiovascular, neurological, endocrine, and infectious diseases, to identify specific diagnoses and underlying aetiologies.

Data Analysis

Data were entered and analysed using Statistical Product and Service Solutions (SPSS) software, version 23 (Chicago, Illinois, USA). Continuous variables were summarised using medians and ranges, while categorical variables were presented as frequencies and percentages.

Results

A total of 3,076 patients were admitted between October 2018 and March 2020, but 2,974 were included in the analysis. The sex distribution was nearly equal,

with 1,469 males (49.4%) and 1,505 females (50.6%). The median age of patients was 46.0 years, with a range of 98 years (from 12 to 110). Patients aged 41–50 years constituted the largest age group (616; 20.7%), followed by those aged 51–60 years (577; 19.4%) and 31–40 years (526; 17.7%). Younger patients aged 21–30 years accounted for 15.9%, while adolescents and young adults aged 12–20 years made up 6.1%. Patients aged ≥ 61 years collectively represented 20.2% of admissions, with progressively declining frequencies in the extreme age groups (≥ 81 years accounting for less than 2%), as shown in Table 1.

Variable	Frequency (N)	Percentage (%)
Gender		
Male	1469	49.4
Female	1505	50.6
Age group		
11-20	180	6.1
21-30	473	15.9
31-40	526	17.7
41-50	616	20.7
51-60	577	19.4
61-70	388	13.0
71-80	160	5.4
81-90	43	1.4
91-100	9	0.3
101-110	2	0.1

Table 1: Age and sex distribution of study population

In 2018, there were 68 admissions in October, 112 in November, and 163 cases in December. In the year 2019, monthly admissions ranged from 182 in April to a peak of 291 in October. Notably, the fourth quarter of 2019 (October–December) recorded the highest admission rates, with 291 cases in October, 282 in November, and 254 in December. In 2020, a sharp reduction in admissions was observed. Admissions declined from 175 cases in January to 51 cases in February, as demonstrated in Figure I

The distribution of medical admissions by speciality is illustrated in Figure II. The Nephrology Unit accounted for the largest proportion of cases, representing 44% of all admissions. This was followed by the Cardiology unit (11%) and Neurology (10%), which together constituted approximately one-fifth of total admissions. Endocrinology contributed 9% of cases, while the Infectious Diseases Unit (IDU) and Gastroenterology accounted for 8% and 7%, respectively. Pulmonary-related admissions made up 7% of the total, whereas Dermatology represented a

relatively small fraction at 3%. Rheumatologic conditions were the least frequent, contributing only 1% of admissions.

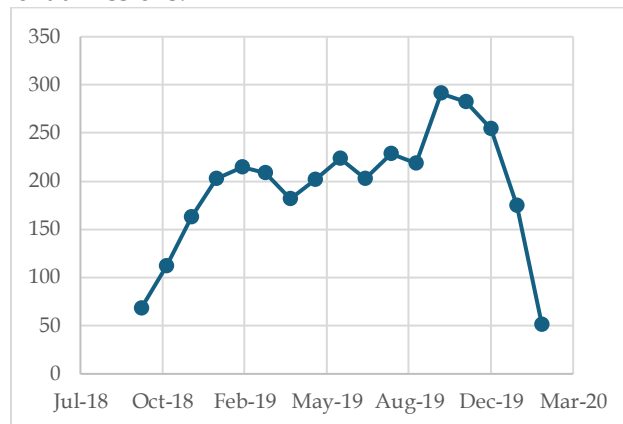


Figure 1: Monthly Distribution of Medical Admissions

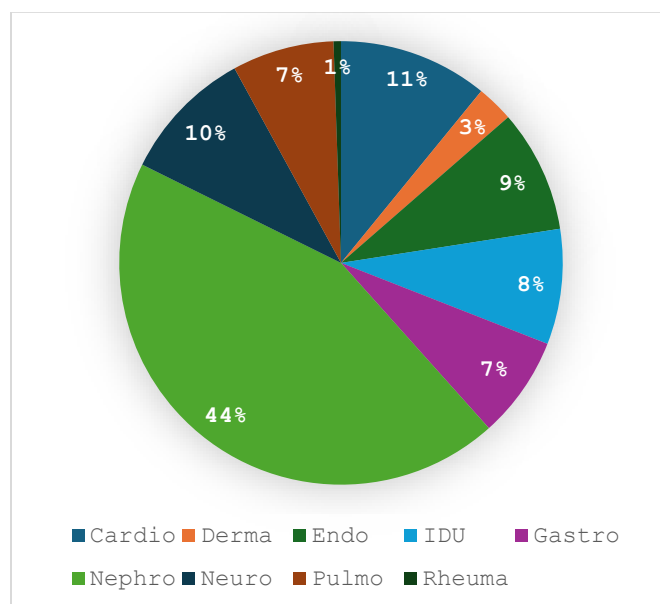


Figure 2: Distribution of Patients into various specialties of the internal medicine

Table 2 demonstrates the distribution of patients into major disease categories. Renal disorders were the leading cause of medical admissions, accounting for 1,401 cases (47.1%) of the study population. Cardiovascular diseases ranked second with 340 cases (11.4%), followed by neurological disorders (289; 9.7%). Metabolic and endocrine disorders contributed 260 admissions (8.7%), while infectious diseases accounted for 245 cases (8.2%). Pulmonology-related conditions comprised 200 admissions (6.7%), and gastrointestinal disorders accounted for 150 cases (5.0%). Patients with other conditions or multiple

diagnoses represented the smallest group (89; 3.0%).
Table 2: Frequency of Major Disease Categories of the study population

Disease Category	Frequency	Percentage
Renal Disorders	1401	47.1
Cardiovascular diseases	340	11.4
Neurological	289	9.7
Metabolic/Endocrine	260	8.7
Infectious Diseases	245	8.2
Pulmonology	200	6.7
Gastrointestinal	150	5.0
Others/Multiple diagnoses	89	3.0
Total	2974	100

Table 3 shows the Pattern of specific medical conditions and aetiologies. Among patients admitted with chronic kidney disease (CKD; N = 1,409), hypertensive nephropathy was the most common aetiology, accounting for 724 (51.7%). This was followed by chronic glomerulonephritis (209; 14.9%) and diabetic nephropathy (174; 12.4%). Other notable causes included analgesic nephropathy (112; 8.0%) and CKD of unknown aetiology (68; 4.9%). Obstructive uropathy due to benign prostatic hyperplasia (42; 3.0%), HIV-associated nephropathy (41; 2.9%), and sickle cell nephropathy (31; 2.2%) were relatively less frequent.

Table 3: Distribution of Major Medical Conditions and Aetiologies Among Admitted Patients

Disease Category	Specific Diagnosis / Aetiology	Frequency (N)	Percentage within Category (%)
Chronic Kidney Disease (N = 1409)	Hypertensive nephropathy	724	51.7
	Chronic glomerulonephritis	209	14.9
	Diabetic nephropathy	174	12.4
	Analgesic nephropathy	112	8.0
	CKD of unknown aetiology	68	4.9
	Obstructive uropathy (BPH)	42	3.0
	HIVAN	41	2.9
	Sickle cell nephropathy	31	2.2
Cardiovascular Diseases (N= 340)	Hypertensive heart disease	166	48.7
	cardiomyopathies & CRS	111	32.5
	Peripartum cardiomyopathy	35	10.3
	Acute coronary syndrome	30	8.6
Neurological Disorders (N = 289)	Stroke	142	49.1
	Seizure disorders	71	24.6
	Meningoencephalitis	62	21.5
	Peripheral neuropathy	14	4.8
Metabolic/Endocrine (N= 260)	Hyperglycaemia(DKA/HHS)	120	46.2
	Hypoglycaemia	86	33.1
	DM Foot	39	15.0
	Thyroid diseases	15	5.8
Gastrointestinal Disorders (N= 150)	Upper Gastrointestinal bleeding	43	28.7
	Chronic liver disease	42	28.0
	Dyspepsia	65	43.3
Infectious Disease Patterns (N= 245)	Malaria	88	35.9
	Tuberculosis	55	22.4
	HIV/ AIDS related complications	46	18.8
	UTI/Pyelonephritis	33	13.5
	Pneumonia (CAP)	23	9.3

HIVAN; HIV- associated Nephropathy, CRS; Cardioresenal Syndrome, DKA; Diabetic Ketoacidosis, HSS; Hyperosmolar Hyperglycaemic State, DM; Diabetes

Discussion

This retrospective review provides a comprehensive overview of the pattern and spectrum of medical admissions at University of Maiduguri Teaching Hospital, Nigeria, and highlights important epidemiological trends with implications for clinical practice, health system planning, and policy formulation. The nearly equal distribution of males and females in this study aligns with several Nigerian and West African hospital-based reviews, indicating similar healthcare usage among both sexes for adult admissions.^{4,5} The median age of 46 years, with most patients in the economically active age groups (31–60 years), highlights a significant burden of medical conditions among middle-aged adults. This contrasts with Stella-Mari *et al.*'s findings in Nigeria's south-south region, where most medical admissions involved elderly individuals.⁶ This trend reflects the increasing impact of chronic non-communicable diseases (NCDs) in Nigeria, which now affect younger populations more than in high-income countries.^{7,8} Additionally, a notable portion of patients aged 61 years or older suggests a demographic shift with implications for long-term care, multimorbidity, and rising health costs.⁹ The observed temporal variation in admissions, with progressive increases toward the last quarter of 2019, may reflect seasonal influences, referral patterns, and healthcare-seeking behaviour. The sharp decline in admissions in early 2020 likely corresponds with disruptions to healthcare utilisation at the onset of the COVID-19 pandemic, movement restrictions, and heightened fear of hospital attendance. Similar reductions in hospital admissions during this period have been reported globally and within Nigeria, reinforcing the indirect impact of public health emergencies on routine healthcare delivery.^{10,11} A striking finding of this study is the overwhelming contribution of renal disorders, accounting for nearly half of all medical admissions. This proportion is higher than that reported in many Nigerian tertiary centres, where infectious and cardiovascular diseases often predominate.^{3,4} The dominance of nephrology admissions may reflect a combination of high regional prevalence of hypertension and chronic kidney disease (CKD),¹² late presentation, limited access to renal replacement therapy at peripheral facilities, and undocumented environmental factors, and the role of UMTH as a major referral centre for renal care in the North-East. The predominance of hypertensive nephropathy as the leading aetiology of CKD aligns

with the rising burden of poorly controlled hypertension in Nigeria.¹³ This highlights persistent gaps in early detection and long-term management at the primary and secondary care levels.

Cardiovascular diseases constituted the second most common cause of admission, with hypertensive heart disease and heart failure accounting for the majority of cases. This finding is consistent with the epidemiological transition observed across sub-Saharan Africa, where hypertension-driven cardiovascular complications remain the dominant phenotype, in contrast to ischemic heart disease being the predominant pattern seen in high-income countries.¹⁴ The relatively lower proportion of acute coronary syndromes in this study likely reflects underdiagnoses, limited access to advanced diagnostic modalities, or true epidemiological differences.

Hyperglycaemic emergencies were the leading cause of metabolic admissions, similar to other Nigerian reports where diabetes-related emergencies predominated endocrine admissions.^{15,16} In a Lagos tertiary centre, hyperglycaemia, hypoglycaemia, and diabetic foot were also the most frequent indications for endocrine admissions, with hyperglycaemic crises being the most common.¹⁶ A retrospective review in Ekiti found the majority of endocrine admissions were diabetes related, with poor glucose control and hyperglycaemic emergencies accounting for the highest proportions.¹⁵ Diabetic foot complications are a significant cause of hospitalisation in Nigeria and Africa generally.¹⁷ Thyroid diseases were infrequent, likely reflecting outpatient management.

Neurological disorders, particularly stroke, were major contributors to admissions. The high burden of stroke among relatively young patients mirrors reports from other Nigerian studies and underscores the devastating impact of preventable vascular risk factors.¹⁸ The substantial contribution of seizure disorders and central nervous system infections further reflects ongoing challenges related to infectious diseases, perinatal factors, and limited access to specialist neurological care.

Despite Nigeria's ongoing struggle with communicable diseases, infectious and tropical conditions accounted for a smaller proportion of admissions compared with renal and cardiovascular disorders. Although malaria and tuberculosis remained prominent, reflecting their endemicity and continued public health relevance. The contribution of HIV/AIDS, though lower than in earlier decades, indicates persistent transmission and the need for

sustained prevention and treatment efforts. This shift toward NCD-dominant admissions, alongside a persistent infectious/tropical disease burden, clearly illustrates Nigeria's dual burden of diseases among the population.

The predominance of hypertensive and metabolic aetiologies across renal, cardiovascular, and neurological admissions highlights hypertension as a central, unifying risk factor driving morbidity in this population. This finding emphasises the urgent need for strengthened preventive strategies, including community-based screening, early treatment initiation, patient education, and long-term follow-up. Improving access to affordable antihypertensive therapy and integrating NCD care into primary healthcare services are critical steps toward reducing avoidable hospital admissions and complications.

Limitations

The retrospective design of the study relied on the accuracy and completeness of medical team admission, leading to the exclusion of some cases and potential misclassification of diagnoses. Being a single-centre study, the findings may not be fully generalizable to other regions of Nigeria.

Conclusion

In conclusion, this study demonstrates that medical admissions at UMTH are dominated by non-communicable diseases, particularly chronic kidney disease and hypertension-related complications, occurring largely in middle-aged adults. These findings underscore the urgent need for robust preventive and early intervention strategies targeting hypertension and other modifiable risk factors, alongside sustained efforts to control infectious diseases.

References:

1. Akpan EE, Udo AIA, Umoh IO, Ekeh BC, Umoh VA, Ekanem AM, et al. Pattern and Outcome of Medical Admissions at the University of Uyo Teaching Hospital: A 5-Year Hospitalization Analysis. *Niger Med J*. 2025;66(1):210–24.
2. Sadiq AM, Njau RE, Kilonzo KG. Disease patterns and clinical outcomes of medical admissions at a tertiary hospital in Northern Tanzania: A retrospective observational study. *Heal Sci reports*. 2023 Jan;6(1):e983.
3. Akoria OA, Unuigbo EI. A 6-Month Review of Medical Admissions in a Nigerian Teaching Hospital. *Int J Heal Res*. 2009;2(June):123–30.
4. Abdulrasheed MM, Nuhu MK. A Review of Medical Admissions at the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria. *Niger Med J*. 2023;64(1):87–94.
5. Ogah OS, Akinyemi RO, Adesemowo A, Ogbodo EI. Analysis of medical admissions at the emergency unit of the Federal Medical Centre, Abeokuta, Nigeria: A 2-year review. *African J Biomed Res*. 2012;15(1):59–63.
6. C. Egboh S-M, E. Bozimo, G. A three-year overview of the pattern and outcome of medical conditions in the medical wards of Federal Medical Centre. *Rwanda Med J*. 2023 Jun 30;80(2):13–22.
7. Idris IO, Oguntade AS, Mensah EA, Kitamura N. Prevalence of non-communicable diseases and its risk factors among Ijegan-Isheri Osun residents in Lagos State, Nigeria: A community based cross-sectional study. *BMC Public Health*. 2020;20(1):1–10.
8. Charalampous P, Gorasso V, Plass D, Pires SM, von der Lippe E, Mereke A, et al. Burden of non-communicable disease studies in Europe: a systematic review of data sources and methodological choices. *Eur J Public Health*. 2022 Apr 1;32(2):289–96.
9. Odunyemi A, Rahman T, Alam K. Economic burden of non-communicable diseases on households in Nigeria: evidence from the Nigeria living standard survey 2018-19. *BMC Public Health*. 2023;23(1):1–12.
10. Birkmeyer JD, Barnato A, Birkmeyer N, Bessler R, Skinner J. The impact of the COVID-19 pandemic on hospital admissions in the United States. *Health Aff*. 2020 Nov 1;39(11):2010–7.
11. Tessema GA, Kinfu Y, Dachew BA, Tesema AG, Assefa Y, Alene KA, et al. The COVID-19 pandemic and healthcare systems in Africa: a scoping review of preparedness, impact and response. *BMJ Glob Heal*. 2021 Dec 1;6(12):e007179.
12. Mohammad SM, Akhlahyel NA, Umar L, Mustapha L, Mustapha M, Ibrahim AG, et al. Prevalence and risk factors of Chronic Kidney Disease in Maiduguri, northeastern Nigeria: A community-based study. *Kanem J Med Sci*. 2024;18(June 2023):1–8.
13. Yirga G Kassaw, Aytenew TM, Kassaw A, Hiruy

- EG, Shiferaw K, Baye AA, et al. Chronic kidney disease among patients with hypertension in sub-Saharan Africa: a systematic review and meta-analysis. *BMC Public Health*. 2025;25(1).
14. Yuyun MF, Sliwa K, Kengne AP, Mocumbi AO, Bukhman G. Cardiovascular diseases in sub-saharan Africa compared to high-income countries: An epidemiological perspective. *Glob Heart*. 2020;15(1):1–18.
15. Raimi T, Fadare JO, Dada S, Adeoti A, Adekeye K, Ajayi A, et al. Endocrine admissions in a tertiary hospital in Nigeria: A 5-year review of patterns and trends. *African J Biomed Res*. 2020;23(2):233–7.
16. A. O. Dada, B. O. Okunowo, S. O. Ogundele, M. A. Amisu AOW. Review of the pattern of endocrine admissions at the emergency unit of a tertiary hospital. *Ann Clin Sci*. 2024;9(1):54–9.
17. Adeloye D, Ige JO, Aderemi A V., Adeleye N, Amoo EO, Auta A, et al. Estimating the prevalence, hospitalisation, and mortality from type 2 diabetes mellitus in Nigeria: A systematic review and meta-analysis. *BMJ Open*. 2017;7(5):1–16.
18. Wahab KW. The burden of stroke in Nigeria. *Int J Stroke*. 2008;3(4):290–2.