Nigerian Medical Journal
NIGERIA MEDICAL ASSOCIATION
Print ISSN 0300-1652, E-ISSN 2229-774X

Original Artide

A Review of Medical Admissions at the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria

***Muhammad Mujtaba Abdulrasheed[1], Maryam Kuso Nuhu[2]**
[1]Department of Medicine, Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria.
[2]Department of Family Medicine, Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria.

Abstract

Background: In-patient records are useful tools for medical audits of the workload and efficiency of our hospitals. These data could go a long way in hospital allocations of both human and material resources, and planning. The aim of the study was to assess the pattern and outcome of admission at the medical inpatients at the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria.
Methodology: A retrospective survey of admission patterns, morbidity profile, and mortalities in the medical wards of ABUTH Zaria, was undertaken from October 2012 to October 2019, using ward records. Morbidity and Mortality data were assessed for both male and female medical wards within the period under review. Data were analyzed using SPSS version 25.
Results: The mean age of patients was 44.17± 19.33. Male: Female ratio = 2.6:1. Civil servants, Traders and Farmers were the predominant occupations of the patients 815/4448 (18.3%), 578/4448 (13.0%), and 547/4448 (12.3%) respectively. About 45.2% of the patients were unemployed. Among the years under review, 2013 had the highest admission rate 19.6% while March and October were the highest months of admissions in comparison to other months of the year. The most frequent admissions were Stroke 465/4448 (10.5%), followed by CKD 266/4448 (6.0), and then Sepsis 261/4448 (5.9%), which were commoner among traders. The mean duration of Hospital stay was 9.16 ± 13.57 days. The overall mortality rate was 21.8% the odds for death among males were higher, OR: 5.092, 95% CI: 4.116- 6.299, P <0.001.
Conclusion: Males at productive age form the bulk of the medical admissions with a higher risk of mortality at ABUTH Zaria and stroke was found to be the commonest case.
Keywords: Review; Medical; Admissions; ABUTH; Zaria.

Corresponding Author: *Muhammad Mujtaba Abdulrasheed, Department of Medicine, Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria. mujtabaabdulrasheed@gmail.com

How to cite this article: Abdulrasheed MM, Nuhu MK. Review of medical admissions at Ahmadu Bello University Teaching Hospital (ABUTH) Zaria. Niger J Med 2023;64(1):87-94.

Quick Response Code:

Introduction

Monitoring and evaluation of any project are crucial for the improvement of that venture. A medical audit of our hospital practice is necessary for us to improve patient care. Unfortunately, these reviews have not been very active. Even when it is attempted, it is limited only to an academic exercise. A review of hospital patterns of morbidity and mortality can be useful in multiple facets of management as it reflects the societal incidence and prevalence of the disease. It can also provide information on diseases of higher risk within the population for intervention. Given the pattern of hospital morbidity, rational inter and intra-resource allocations can be done with more justice; and the data utilized for planning. The records systems in Nigerian public hospitals are mostly analogue and not very regularly updated by our Health information workers. The use of electronic medical/Health record systems (EMR/EHR) is limited by the unavailability of regular electricity and internet systems.

A literature search revealed an old review of medical admissions at the old Kaduna arm of ABUTH more than 20 years ago with a very small sample size of 79. [(1)] The data also limited itself majorly to mortality. [(1)] A more recent review was limited to admissions at the emergency room. [(2)] There are other entry points for patients apart from emergencies. For instance, some patients are admitted through outpatient clinics while others might be transferred from non-medical wards. Again, during that period, the Emergency unit was a mixture of both medical and surgical emergencies, and the review is more than five years old. Clinical audit in the hospital is expected to be regular and periodic. [(3)(4)] This is the minimum standard expected of a state-of-the-art health care provider. More so for a Tertiary institution like Ahmadu Bello University Zaria.

A review of previous studies across the Geo-political zones of Nigeria has also shown similar trends. A previous study at the Aminu Kano Teaching Hospital a neighboring hospital in North-western Nigeria showed that non-communicable diseases (NCDs) were the more common cause of mortality than infections.[(5)] In the South-west zone, a review of admissions at the Emergency unit of Federal Medical Center (FMC) Abeokuta, between 2006-2007 revealed infections as the commonest indication for admission but after cumulation, non-communicable diseases NCD were more than communicable diseases.[(6)] In Southeastern Nigeria, the University of Nigeria Teaching mortality review showed that NCDs collectively caused more mortality than infections.[(7)] In South-south Nigeria, a similar review of morbidity and mortality done in 2019 still rank infections as the commonest cause of mortality. (8). The aim of the study was to assess the pattern and outcome of admission at the medical inpatients at the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria.

Methodology

Ahmadu Bello University Teaching Hospital Zaria is a 1000-bed capacity tertiary hospital located in Shika, Giwa LGA. Kaduna State of Nigeria. The medical ward of the hospital admits a significant number of inpatients. The medical wards are divided into male and female wards of two rooms each. Each of those rooms has a 36-bed capacity. The spectrum of admissions varies across all subspecialties of internal medicine.

A retrospective cross-sectional study was carried out. The non-electronic records of medical patients admitted to male and female medical wards of Ahmadu Bello University Teaching Hospital Shika Zaria, between October 2012 to October 2019 were retrieved from the records of patients and analyzed. Patient records with incomplete data was excluded. The records of biodata, date of admission, date of discharge, or date of death were taken as the outcome were extracted. Other records that were extracted include the month and year of admission, duration of hospital stay, and diagnosis. Data were analyzed using Statistical Package for Social Science, SPSS, version 25, to present descriptive statistics. Findings were presented as frequencies and percentages in tables and charts. The test of statistics was determined using the student t-test for quantitative data while the chi-square was used to test for qualitative data. Binary logistic regression was used to analyze the predictor variables. The level of significance is taken as p-value < 0.05 at 95% CI.

Results

A total of 4448 patients' records were retrieved. The age range of the patients was 12 to 110 years, and the mean age was 44.17±19.33 as shown in Table 1. Males were 3221 (72.4%) while females were 1227 (27.6%) with Male: Female ratio of 2.6:1. Civil servants, Traders, and Farmers were the predominant occupations of the patients 815/4448 (18.3%), 578/4448 (13.0%) and 547/4448 (12.3%) respectively, while 45.2% of the patients were unemployed. Among the years under review, 2013 had the highest admission rate 19.6% while the months of March and October recorded the highest admissions as demonstrated by Figures 1 and 2.

Table 2 shows the frequency of the top 12 diagnoses among medical inpatients. There was a higher incidence of non-communicable diseases than Communicable diseases. The most common medical admission was Stroke 465/4448 (10.5%), followed by chronic kidney disease (CKD) 266/4448 (6.0), and then Sepsis 261/4448 (5.9%). The mean duration of hospital stay was 9.16 ± 13.57 days. The frequency distribution of occupations and diagnoses were shown in Table 3. Civil servants, Farmers, Traders, and Drivers were the predominant occupations. Traders had the highest incidence of stroke and CKD.

Out of the total records analyzed, 2189 had clearly documented outcomes as either discharged (1218) or died (971). The overall mortality rate was 21.8%. A view of the mortality profile by diagnosis is shown in Table 4. Chronic Liver Disease had the highest percentage mortality at 51.44% (107/208), followed by HIV/AIDS complications at 42.37% (51/118), then thirdly Sepsis at 34.10% (89/261).

The mean age of patients who were discharged was significantly lower than those who died ($P < 0.001$). Patients who were discharged had a longer duration of hospital stay compared to those who died as shown in Table 5. Males were less likely to be discharged compared to females (OR 0.204, 95% CI: 0.166-0.252, $P<0.001$) as shown in Table 6. There was no statistically significant relationship between diagnosis on admission (infective or non-infective) and outcome (discharge vs died) (X^2 =0.006, P 0.939) also shown in Table 6.

A Binary logistic regression analysis was conducted with the outcome (discharged or died) and age, gender, and duration of hospital stay as predictor variables. When age and duration of hospital stay were controlled for, the odds for death among males was 5.092, 95% CI: 4.116- 6.299, $P <0.001$.

Table 1: Age distribution of medical inpatients at ABUTH Shika (2012-2019)

Age Category (years)	Frequency	Percent
No records	45	1.0
10-19	366	8.2
20-29	791	17.8
30-39	733	16.5
40-49	631	14.2
50-59	748	16.8
60-69	577	13.0
70-79	410	9.2
80-89	110	2.5
90-100	34	0.8
Above 100	3	0.1
Total	4448	100

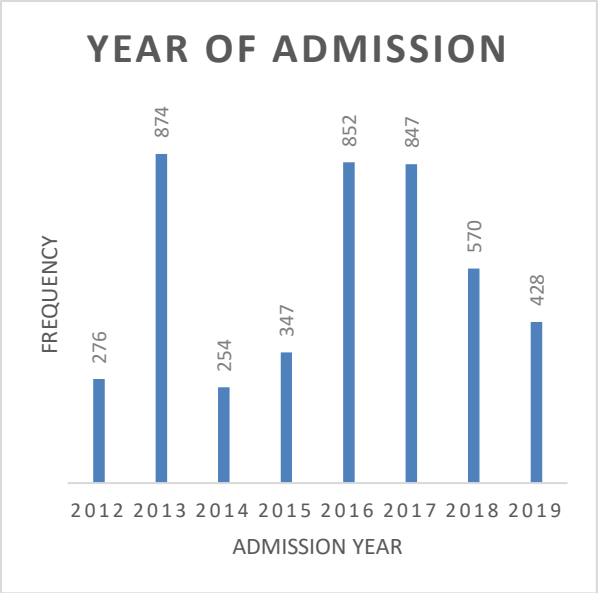

Figure 1: Trend of Medical Admissions by Year of Study at ABUTH Shika (2012-2019)

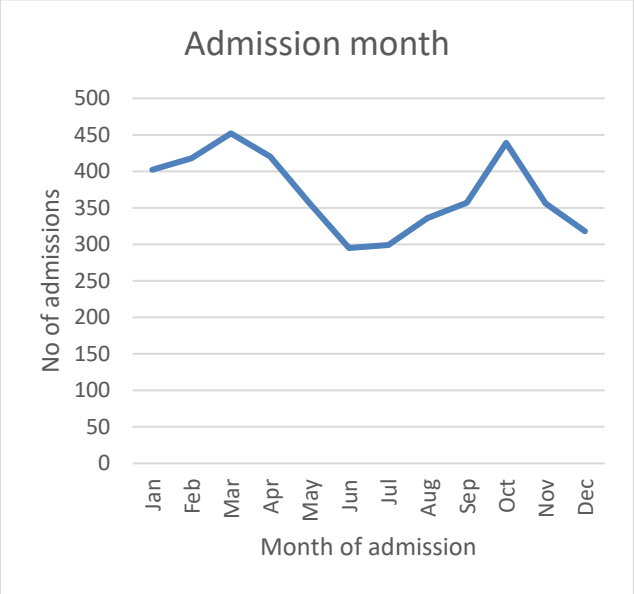

Figure 2: Trend of Medical In-patients' Admission by Month of the Year at ABUTH Shika (2012-2019)

Table 2: Frequency of diagnosis of medical inpatients admission at ABUTH Zaria

Diagnosis	**Frequency**	**Percent**
Stroke	465	10.5
CKD	266	6.0
Sepsis	261	5.9
CLD	208	4.7
Diabetic foot	167	3.8
CCF	146	3.3
Hyperglycaemic emergency	124	2.8
RVD complications	118	2.7
AKI	116	2.6
Severe malaria	94	2.1
TBM	71	1.6
PTB	71	1.6

Table 3: Frequency distribution of most frequent diagnosis by the occupation of patients

	Diagnosis		
Occupation	Stroke	CKD	Sepsis
Doctors	3	1	1
Nurses	2	0	1
Other health workers	1	0	2
Civil servants	68	43	52
Farmers	59	44	30
Traders	81	56	34
Drivers	15	11	6
Student	2	4	17

Table 4: Frequency of Mortality by the diagnosis of medical inpatients at ABUTH Zaria

Diagnosis	**Mortality frequency**	**Percentage mortality**
CLD	107/208	51.44
RVD complications	50/118	42.37
Sepsis	89/261	34.10
PTB	24/71	33.80
Diabetic foot disease	56/167	33.53
CCF	47/146	32.19
Stroke	149/465	32.04
CKD	80/266	30.08
Hyperglycaemic emergency	34/124	27.42
TBM	18/71	25.35
AKI	24/116	20.69
Severe malaria	10/94	10.64

Table 5: Relationship between continuous variables (age, duration of hospital stay) and outcome (Discharge or death)

Variable	**Outcome** Discharge (1218)	Died (971)	T	P value
Mean age (years)	43.5±19.93	49.22±18.60	-6.921	<0.001
Mean duration of hospital stay (days)	11.70±12.56	9.01±10.29	5.509	<0.001

Table 6: Relationship between categorical variables (gender, diagnosis) and outcome (Discharge or death)

		Outcome				
		Discharge (1218)	Died (971)	X^2	OR	P value
Gender	Male	648 (44.1%)	823 (55.9%)	244.08	0.204 (0.166-0.252)	<0.001
	Female	570 (79.4%)	148 (20.6%)			
Diagnosis	Non-infective	504 (47.7%)	553 (52.3%)	0.006	0.992 (0.813-1.211)	0.939
	Infective	293 (47.9%)	319 (52.1%)			

Table 7: Risk of mortality among patients (Binary logistic regression)

	OR (95%CI)	**P value**
Age (years)	1.016 (1.012-1.021)	< 0.001
Male gender	5.092 (4.116-6.299)	< 0.001
Duration of hospital stay (days)	0.971 (0.961-0.980)	< 0.001

Discussion

Medical ward admissions generally involved a wide range of age groups as demonstrated by this data (12-110 years). However, the average age is about 44.17±19.33 years. This is like the findings by Garko et al, [1] in a study done over twenty years ago in ABUTH Zaria. The analysis of the age distribution of patients in this audit showed that the patients in the peak of productive age were the majority of patients who were hospitalized. This finding corresponds with that of studies from other regions of Nigeria [3][5][6] [8][9] More than half of the patients were found to be above the age of 40 years as demonstrated by studies in other sections of our hospital and other centers in the country.[1][2][6] This observation highlights the need for the modulation of modifiable risk factors such as diet, exercise, and workplace occupational hazards in patients in this age group to reduce the burden of hospitalization among patients in this age group.

The predominant occupations of the inpatients in this study were civil servants and traders with sedentary patterns of prolonged immobility at work which is a known risk factor for non-communicable diseases. It is therefore not surprising that stroke and CKD were found to be the commoner causes of admissions under study the period with civil servants and traders having a higher frequency of stroke in comparison to farmers and other occupations. It is known that occupational patterns and lifestyle practices can influence the pattern

of medical diagnosis and hospitalization. Though studies evaluating the impact of occupation on the pattern of medical admissions in Nigeria are sparse, the importance of occupational and work environment factors is supported in a study (11) in eastern Nigeria that showed a significantly higher frequency of non-communicable diseases in urban compared to rural dwellers.

There is a general relationship between season and pattern of illnesses in either the incidence of acute illness or exacerbation of chronic illnesses. In Northern Nigeria, the vegetation Savannah with areas around Zaria is typically described as Sudan Savannah. [11] The seasons across the year are winter/harmattan around November to February. Next is the hot season between March to April. Then the rainy season is between April to August/September. The admission pattern in medical wards across the year looks bimodal around February-March-April and September-October-November. These coincide with the period of seasonal change which is inclined to possible immunological adaptation to the seasonal transition. Ibrahim et al (12) in a study of medical admissions from a rural area in Nigeria also reported a seasonal environmental variation and a peak of admissions during the rainy seasons with (60.1%) of patients in their study admitted during these periods between April to October. This is like the results of this study where most of the admissions occurred from February to April and September to November. These findings show that seasonal variations may influence the outcome and patterns of hospitalization in a geographic location. A focus on annual admissions shows a progressive decline in total annual admissions from 2016 onward. This may be connected to the revival of an old hospital in the heart of town (Tudun-Wada, Zaria LGA). People find it easier to carry their primary health care (PHC) cases to that branch. This reduced the pressure on such cases to allow the Shika main hospital to concentrate on secondary and tertiary cases. Another factor may be a higher rate of poverty because of the progressive rise in inflation.

Mortality in the developing world is typically higher than in developed countries. Several factors make these statistics so. These factors include the lack of a coordinated and financially buoyant healthcare system, higher poverty rates, out-of-pocket health expenditures, and late presentations. [5] Aside from CLD which was found to be the most common cause of mortality, all other top causes of mortality were infectious causes, which are potentially preventable. Similar findings were discovered in other tertiary hospitals in the Southern part of the country. [7][9] Other non-communicable diseases that caused mortality were CCF, stroke, CKD other non-infectious diabetic complications. The same patterns were found in a neighboring state (5) and the southern part of the country. [7]

The study revealed that the younger the patients, the high the chances of being discharged and the lower the chances of mortality ($P<0.001$). This is not unexpected because the older the patient, the likelihood of living longer with a chronic disease and the greater the probability of succumbing to the complications of those diseases. Also, if the disease is severe, the chances of mortality in the early days of hospital admission are higher. Is not surprising that the study found that the mean duration of hospital stay was longer in those that were discharged than those who died ($P <0.001$). The male gender was discovered to have a lower likelihood of being discharged compared to their female counterpart even if they were younger and they stayed longer in the hospital. Most of the previous studies have earlier shown that the burden of diseases was higher in males than females. [3][5][6] [8][9]

Conclusion

Males at productive age form the bulk of the medical admissions with a higher risk of mortality at ABUTH Zaria and stroke was found to be the commonest indication for admission. There is a need for an upgrade of the hospital's Health Information System to an EMR. EMR systems have a lot of advantages including the requirement of less manpower, easier access to the patient's information, and less bulk of stationery. However, the efficiency of such a system requires a regular power supply and good internet service. Overall, the benefit of an electronic record system far outweighs the burden of setting up that system. Efforts at improving the standard of care would go a long way in reducing the duration of hospital stays and promoting favorable disease outcomes. The results of this study can also be used in resource allocation planning for the

care of patients and the development of a human resource for health plan to achieve an adequately skilled workforce required to provide the quality of care for patients with common medical conditions.

Limitations

The source of study data was analogue. An indication of the absence of comprehensive electronic record keeping and system. Consequently, the data had a lot of incomplete records. A significant number of the outcomes were also not stated.

References

1. Garko SB, Ekweani CN, Anyiam CA. Duration of hospital stay and mortality in the medical wards of Ahmadu Bello University Teaching Hospital, Kaduna. *Ann Afr Med*. 2016; **2**:68–71.
2. Jamoh BY, Abubakar SA, Isa SM. Morbidity and mortality profile of patients seen in medical emergency unit of a Teaching Hospital in Nigeria: A 4-year audit. *Sahel Med J*. 2018; **213**–7.
3. Akoria O, Unuigbe EI. A 6-Month Review of Medical Admissions in a Nigerian Teaching Hospital. Akoria Unuigbe Rev Med Admissions *Int J Heal Res*. 2018; **2**:21–6.
4. Rose N, Pang DSJ. A practical guide to implementing clinical audit. *Can Vet J*. 2021; **62**:145–52.
5. Hadiza S. Mortality patterns in the Medical Wards of Murtala Muhammad Specialist Hospital, Kano, Nigeria. *Niger J Basic Clin Sci*. 2018; **15**:73.
6. Ogah OS, Akinyemi RO, Adesemowo A, Ogbodo EI. A Two-Year Review of Medical Admissions at the Emergency Unit of a Nigerian Tertiary Health Facility. *Afr J Biomed*. 2012; **15**:59–63.
7. Arodiwe EB, Nwokediuko SC, Ike SO. Medical causes of death in a teaching hospital in South-Eastern Nigeria: A 16-year review. *Niger J Clin Pract*. 2014; **17**:711–6.
8. 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 [Internet]*. 2020; **15**:1–15. Available from: http://dx.doi.org/10.1371/journal.pone.0237313
9. Eze CO, Okoro FC, Nwobodo MU, Nnaji TO, Isiguzo GC. Pattern of mortality in medical wards: experience at Abakaliki Nigeria. *Int Res J Med Biomed Sci*. 2020; **5**:36–41.
10. Eludoyin OM, Adelekan IO. The physiologic climate of Nigeria. *Int J Biometeorol*. 2013; **57**:241–64.
11. Ezeala-Adikaibe B, Aneke E, Orjioke C, Ezeala-Adikaibe N, Mbadiwe N, Chime P, Okafor U. Pattern of medical admissions at enugu state university of science and technology teaching hospital: a 5-year review. *Ann Med Health Sci Res*. 2014 May; **4**:426-31.
12. Ibrahim AO, Agbesanwa TA, Aremu SK, Agboola SM, Shabi OM, Afolabi BA. A 5-year analysis of admissions, seasonal variation, and patient outcomes in rural Nigeria: A retrospective observational study. *Int J Acad Med* 2022; **8**:193-8