

Original Article

Profile and Outcome of Medical Emergencies in a Teaching Hospital in the Commercial City of Aba, Southeast Nigeria

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ABSTRACT

Medical conditions present at the Accident and Emergency (A&E) or Emergency Department (ED) very often. Outcome of medical emergencies depends, among other factors, on the age of patients, gender, socioeconomic factors, medical conditions, their severity, time of patients' presentations, quality of care/treatment given and the available resources (manpower and facilities) in the A&E. There is a paucity of published literature on medical emergencies outcome in Aba, Southeast Nigeria. This study, therefore, set out to bridge this gap in knowledge. This was a 1-year observational study in which patients presenting to the A&E/ED of ABSUTH, Aba for treatment of a medical condition were consecutively recruited and followed up until discharged home, admitted to the medical wards or died in A&E. This study lasted from January 1, 2018 to December 31, 2018. Relevant data obtained were analyzed using Statistical Package for Social Sciences (SPSS) version 20.0 software. A total of 589 patients presented at A&E because of medical conditions/emergencies, made up of 269 (45.7%) males and 320 (54.3%) females. The commonest medical emergencies were DM related complications, acute malaria, HIV/AIDS, heart failure and stroke. Study subjects discharged home were 17.5%, 71.1% were admitted into the medical wards and 11.4% died. Medical emergencies, caused predominantly by non-communicable diseases (NCDs), contributed significantly to the A&E cases in the city of Aba, Nigeria and are associated with considerable mortality. It is recommended that efforts should be made to control the modifiable risk factors of NCDs while early detection and treatment of communicable and NCDs should be affected.

Keywords: Accident, Emergency, Medical, Treatment, Southeast

INTRODUCTION

Medical emergencies occur daily in clinical practice. Emergency department (ED) visits are largely unplanned. The Accident and Emergency (A&E) department is the first point of care for medical emergencies where initial assessment, diagnosis,

resuscitation, care and referral to the appropriate specialists are made. Depending on a health institution's policy, volume of medical/surgical emergencies and available bed spaces in A&E/ED, patients spend hours to days in A&E within which some will be admitted in the wards, others will be transferred to other centres while others will be treated and discharged home to be followed

up in the clinics. Globally, there is increased demand for ED care and resuscitation caused by increased population, improved health technology and increased life expectancy.^{1,2}

The pattern of medical conditions presenting in a hospital reflects the diseases pattern in a community though the precise prevalence of such might not be determined.¹ This information on A&E admissions is important for planning and formulation of policy necessary for allocation of resources for health services, research and training.² It is estimated that medical wards admissions constitute 22-40% of hospital admissions^{1,3,4} and this is directly related to A&E admissions. For patients presenting at the A&E/ED, the quality and promptness of medical services has a direct relationship with the treatment outcome of patients with acute illnesses. Communicable diseases (CDs) are the main indications for hospital admissions in developing countries^{1,3} with non-communicable diseases (NCDs) accounting for only 34%.. Most ED visits are caused by non-surgical causes and majority survive.⁵

Problems facing patients in the A&E/ED include overcrowding, lack of privacy and empathy, uncomfortable environment and manpower inadequacy.^{6,7} These aforementioned challenges are more glaring in the low and middle income countries (Nigeria inclusive) with a weak healthcare system.⁴

Outcome of medical emergencies depend partly on the facilities and manpower available in A&E.^{8,9} Mortality in the ED may result from various factors including incompetence of the attending junior physicians, delays in presentation and inadequate facilities.¹⁰

There have been studies on the pattern and outcome of medical admissions in Nigerian hospitals^{3,4,11-13} but none on medical emergencies in ABSUTH, Aba, Southeast, Nigeria. This study, therefore, set out to bridge this gap in knowledge necessitated by a dearth of published data on outcome of medical emergencies in ABSUTH, Aba. The index study, also, served as a tool for auditing the overall quality of service delivery in the A&E department of ABSUTH, Aba.

SUBJECTS AND METHODS

Study design and Setting

This was an observational study conducted at the A&E/ED of ABSUTH, Aba. Aba is a commercial city in the southeast region of Nigeria where the people are involved in lots of trading, craftwork and mercantile activities. The A&E/ED provides medical and surgical emergency services to patients living in Aba and the neighboring communities and states. It has 10 beds with a resuscitation bay and is run by medical officers who are overseen by an orthopaedic surgeon. It also receives referral from the Anti-Retroviral Therapy (ART) clinic. The A&E/ED runs three shifts during weekdays and 48 hour on-call duty during the weekends with support from the nursing unit, medical records, pharmacy section and the cleaners. After initial triage and resuscitation, patients are sorted out and the medical and surgical teams are called to review and continue management of the patients based on established treatment protocols of the hospital. The study subjects were consecutively recruited when they sought treatment at the A&E/ED of the hospital. Each subject presenting with one medical condition or the other was given appropriate treatment and resuscitation based on the assessment of the A&E/ED medical officer on duty and, later, medical team on call. While being managed by the respective medical team/unit, each of the study subjects was followed up till he/she left the A&E/ED and the outcome measures in the A&E (improved and discharged home, admitted to the medical wards, died or referred/transferred to another centre) was documented.

Inclusion criteria

All patients presenting at the A&E/ED with a diagnosis of a medical condition from age 15 were included in the study. Patients with repeat visits within the study period were counted as two or more depending on their number of visits.

Exclusion criteria

Patients that sustained surgical/traumatic injuries in addition to a background medical condition were excluded from the study. Again, patients who declined consent when they became stable/conscious, died soon after

presentation at A&E without receiving treatment or patients 'brought in dead' were excluded from the study.

Recruitment and Data Collection

From January 1, 2018 to December 31, 2018, using the consecutive type of non-probability sampling technique¹⁴, 589 accessible subjects that met the inclusion criteria for the study constituted the sample population. Demographic characteristics of the study subjects were extracted from the patients' case notes, total number of all A&E cases within the study period were obtained from the Admission register of the A&E nurses while the other outcome measures were captured as the events occurred. Ethical approval was obtained from the Institution's Health Research Ethics Committee before commencing the study but patients' written consent was waived by the Ethics Committee.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS Inc. Chicago IL. USA) version 20.0 statistical software was used for data analysis. For continuous variables such as the ages of the study subjects and lengths of hospital stay, mean values and standard deviations (SD) were calculated and the means compared using two samples t-test. Categorical variables such as the frequency of the medical emergencies, sex and outcome of A&E treatment were summarized using proportions expressed in percentages. The categorical variables were compared using the non-parametric test, chi square test. The level of statistical significance was set at $p < 0.05$.

RESULTS

A total of 769 patients presented at the A&E/ED of ABSUTH within the study period of which 589 (76.6%) were admitted because of medical illnesses, made up of 269 (45.7%) males and 320 (54.3%) females with a ratio of 1: 1.19. The age range was 15 – 94 years with a mean age of 48.39 ± 19.36 ; male 51.22 ± 17.32 , female 46.30 ± 20.43 . The difference in the mean ages of the male and female patients was not statistically significant ($t=1.622$,

$p=0.105$). Traumatic/surgical injuries especially resulting from road traffic accidents accounted for 180 (23.4%) of patients that presented to the A&E/ED of ABSUTH within the period under review. The major causes of medical emergencies in ABSUTH were DM related complications followed by acute malaria (uncomplicated and severe), HIV/AIDS, heart failure, stroke and chronic kidney diseases. Non-communicable diseases (NCDs) and the communicable diseases (CDs) were responsible for 64.9% and 35.1% respectively of the A&E medical illnesses. Other details are shown in Table 1.

Table 1: Spectrum of the major medical diseases presenting in the A&E/ED of ABSUTH, Aba, within the study period

Diagnosis	Male	female	Total (n=589) (%)
DM related complications	46	38	84 (14.3%)
Peptic ulcer disease/chronic dyspepsia	9	12	21 (3.6%)
Gastroenteritis	4	9	13 (2.2%)
Chronic kidney disease	15	14	29 (4.9%)
Heart failures	34	32	66 (11.2%)
Snake bite	4	2	6 (1.0%)
Chronic liver disease	15	10	25 (4.2%)
Acute malaria (uncomplicated)	25	37	62 (10.5%)
Acute malaria (complicated)	5	9	14 (2.4%)
HIV/AIDS	28	39	67 (11.4%)
Psychosis (substance induced)	7	0	7 (1.2%)
Epilepsy	3	1	4 (0.7%)
Acute kidney injury	0	4	4 (0.7%)
Lymphoma and other malignancies	3	0	3 (0.5%)
Severe anaemia ?cause	5	8	13 (2.2%)
Stroke	18	32	50 (8.5%)
CAP, acute pyelonephritis and sepsis	6	6	12 (2.0%)
Osteoarthritis	0	6	6 (1.0%)
PTB	3	3	6 (1.0%)
Hypoglycaemia	4	3	7 (1.2%)
Hypertension	6	11	17 (2.9%)
Acute bronchial asthma	5	7	12 (2.0%)
Anxiety neurosis	0	4	4 (0.7%)
Miscellaneous other diseases	24	33	57 (9.7%)
Total	269	320	589 (100%)
Non-communicable diseases (NCDs)	182	200	382 (64.9%)
Communicable diseases (CDs)	87	120	207 (35.1%)

Key: HIV/AIDS = human immunodeficiency virus/ acquired immunodeficiency syndrome, CAP = Community acquired pneumonia, PTB = pulmonary tuberculosis.

NB: Miscellaneous other diseases - any disease that contributed < 3 (0.5%) of the medical emergencies in ABSUTH, Aba was included here.

When presented according to systems of the body, infectious and parasitic diseases came up top, followed by the endocrine diseases and metabolism (diabetes mellitus mainly), diseases of the cardiovascular system, nervous system and the digestive system (Table 2).

Table 2: Spectrum of medical diseases presenting at A&E/ED of ABSUTH, Aba based on the ICD-10

Code	Diseases	Frequency (n=589) (%)
A or B	Infectious and parasitic diseases	207 (35.1 %)
C	Malignant neoplasms	3 (0.5%)
D	Anemia	13 (2.2 %)
E	Endocrine, nutritional and metabolism	91 (15.5 %)
F	Mental and behavioural disease	11 (1.9 %)
2	Diseases of the nervous system	54 (9.2 %)
I	Diseases of the circulatory system	83 (14.1 %)
J	Diseases of the respiratory system	19 (3.2 %)
K	Diseases of the digestive system	50 (8.5 %)
M	Diseases of the musculoskeletal system and connective tissues	10 (1.7 %)
N	Diseases of the genitourinary system	37 (6.3 %)
R	Others	11 (1.9 %)

Key: ICD = international statistical classification of diseases.

Table 3: Overview of outcome of A&E medical emergencies in ABSUTH, Aba.

Gender	Admitted to wards	Treated & discharged home	Died	Total
Male	194	27	27	248
Female	225	76	40	341
Total	419 (71.1%)	103 (17.5%)	67 (11.4%)	589 (100%)

Table 4 Outcome of the major diseases that caused medical emergencies in ABSUTH, Aba.

Outcome	HIV/AIDS	DM RC	Stroke	HF	CKD	Malaria	CLD	AKI	Anemia
Admit	52	67	35	59	24	31	18	1	8
Home	0	3	2	3	0	43	0	0	2
Dead	15(22.4%)	14(20.9%)	13(19.4%)	4(5.9%)	5(7.5%)	2	7(10.4%)	3	3
Total	67	84	50	66	29	76	25	4	13

Key: HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome, DM RC = diabetes mellitus related HF=heart failures, CKD = chronic kidney diseases, CLD = chronic liver disease, AKI = acute kidney injury complications, , Admit = admitted to the medical wards, Home = treated and discharged home

Outcome of medical emergencies in the A&E of ABSUTH, Aba

A total of 103 (17.5%) of the medical emergencies improved and were discharged home, 419 (71.1%) were admitted to the medical wards while 67 (11.4%) died in the A&E/ED within the period under review (table 3). The differences in the outcome of the male and female patients were statistically significant ($X^2 = 14.41$, $p = 0.001$). With an A&E mortality of 11.4%, the major causes of death within the study period were HIV/AIDS, DM related complications, heart failures, chronic liver disease, stroke and CKD with case fatalities of 22.4%, 20.9%, 5.9%, 10.4%, 19.4% and 7.5% respectively (table 4).

DISCUSSION

The main findings of this study were that medical emergencies constituted the major reason for A&E presentation, the NCDs presented more commonly than the CDs of which the major causes of medical emergencies in ABSUTH were DM related complications followed by acute malaria (uncomplicated and severe), HIV/AIDS, heart failures, stroke and chronic kidney diseases. Majority of the medical emergencies were admitted in the medical wards while an overall significant mortality was noted in the A&E.

In the index study, medical emergencies accounted for 71.6% of all A&E cases within the study period and this is greater than the 61.9% and

53.7% reported respectively in Birnin Kudi⁵, Northwest, Nigeria and Lagos,¹⁵ Southwest, Nigeria. Reason for this disparity is not clear but may have to do with reduction in road traffic accidents and associated traumatic injuries following ban on the use of motor cycles for commercial shuttling in the cities in the whole of Abia state. Use of motor cycles for commercial purposes is still practiced in some cities in the Northwest and Southwest, Nigeria, resulting in relatively more road traffic accident cases with associated traumatic injuries than medical conditions. However, the contribution of infectious and parasitic diseases (35.1%) to the A&E medical emergencies burden in this study is comparable to the 34.5% reported in the Birnin Kudu⁵ study; infectious diseases burden in both studies is higher than the 20.6% and 21.8% reported in Kaduna¹⁶ and Portharcourt¹⁷ respectively. From all these studies, it is apparent that infectious and parasitic diseases still pose important public health challenges in Nigeria. This is probably due to poor personal and community hygiene coupled with illiteracy, inadequate health education programmes, low national health budget and the consequent weak health care system.

Non-communicable diseases in the index study (64.9%) accounted for the majority of the medical emergencies in ABSUTH and, this is comparable to the 71.5% and 54.7% reported respectively in the Kaduna¹⁶ and Portharcourt¹⁷ studies. This is, probably, in keeping with the current trend of increasing burden of non-communicable diseases in sub-Saharan Africa as a result of the westernization of their diets, sedentary lifestyles, resultant obesity and rapid urbanization taking place in sub-Saharan African countries including Nigeria. Another explanation for the predominance of NCDs in the A&E of ABSUTH, Aba within the period under review could be due to the epidemiologic transition from traditional scourge and burden of CDs to that of NCDs in Africa as reported by Omran.¹⁸ Also, there is emergent double disease burden as CDs like HIV/AIDS, malaria, viral hemorrhagic fevers and tuberculosis are still wreaking havoc in Africa.¹⁹⁻²³ As a result, the health systems of Nigeria and other developing countries are further strained by the double disease burden.^{24,25}

More females (54.3%) than males presented at the A&E of ABSUTH within the study period. This is similar to findings in Abakiliki²⁶ where it was noted that most men declined to go to hospital until their illnesses become very severe. This has been shown to be cultural and in the nature of men to deny illness as a mark of strength. This makes them to usually present to the hospitals in an advanced stage of their disease with consequent higher mortality. It could, also, be due to a better health seeking behavior among females²⁷ as reported by *Omemu et al* despite that it has been documented that males are at more risks than females for DM, strokes, CKD and other NCDs.²⁸

The spectrum of predominant medical conditions seen in the AE of ABSUTH within the study period is comparable to findings in other Nigerian studies.^{5,15-17,26} The obvious explanation for this is because the hospitals where the studies were undertaken were funded from the same health budget with similarities in literacy levels, cultural and superstitious beliefs, urbanization, consumption of westernized diets and tendency to sedentary lifestyles and obesity. While in the index study, the commonest causes of medical emergency were DM related complications followed by malaria and HIV/AIDS, stroke was the commonest medical case as well as the commonest cause of death in the Lagos,¹⁵ Portharcourt¹⁷ and Abakiliki²⁶ studies. Similarly, stroke contributed significantly to A&E presentations in this study.

In this study, 17.5% of the AE medical conditions improved and were discharged home. This is much lower than the 37% reported in the Kaduna¹⁶ study. It is important to note that majority of the patients that improved (41.7% of them) and were discharged home in our study were treated for acute uncomplicated malaria. The implication of this is that if the primary and secondary health facilities serve their purposes well, these cases of acute uncomplicated malaria should not present at the tertiary and specialist hospitals. Acute uncomplicated malaria should be treated well at the community and primary health centres without putting more strain on the lean budget, manpower and resources of the tertiary hospitals. Again, it is worth noting that all 6 cases of snake bites in this study improved and were discharged home.

suggesting, probably, a low incidence of envenomation in the snake species in and around Aba. This finding is in keeping with an earlier report by Nkpozi *et al*¹³ that no case of snake bite was admitted in the medical wards of ABSUTH, Aba over a ten-year period

Finally, the overall mortality of the medical emergencies (11.4%) in ABSUTH, Aba is comparable to the 10.1%, 9%, 10.2% and 9.2% noted respectively in the Birnin Kudu,⁵ Lagos,¹⁵ Kaduna¹⁶ and Portharcourt¹⁷ studies. In the index study, the major contributors to A&E mortality were, in descending order, HIV/AIDS, DM related complications and stroke just as was noted in the Portharcourt¹⁷ study where the case fatalities from HIV/AIDS related infections, hypertensive heart diseases and stroke were 22.4%, 18.4% and 15.7% respectively. Compared with the index study, the overall A&E mortality in the Abakiliki,²⁶ another Portharcourt¹⁰ and Western Ethiopian²⁹ studies seemed low at 4.31%, 6.8% and 8.5% respectively but these statistics were for all A&E cases and not for the medical emergencies only. The implication of these findings is that health policy planners, heads of tertiary health institutions and governments need to do more as regards trained health personnel, facilities and resources in the nations A&E departments. If Nigeria and the low-income countries get it right at this first point of contact of hospitals with the patients, outcome of medical ward admissions will improve.

CONCLUSION

This study has shown that medical emergencies especially the NCDs were the predominant presenting illnesses in the A&E/ED of ABSUTH, Aba within the period under review. Again, the major causes of medical emergencies in ABSUTH were, in descending order, DM related complications followed by acute malaria (uncomplicated and severe), HIV/AIDS, heart failures and stroke while the major causes of A&E deaths were HIV/AIDS, DM related complications and stroke. It is, hereby, recommended that prevention, early detection and effective management of NCD risk factors be pursued to reduce morbidity and mortality from NCDs. Effective

health education is a strong weapon to check the increasing prevalence and impact of these diseases. Dedicated stroke units are overdue in specific centres in the major regions of Nigeria.

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