World Journal of Biology Pharmacy and Health Sciences
eISSN: 2582-5542
Cross Ref DOI: 10.30574/wjbphs
Journal homepage: https://wjbphs.com/

(RESEARCH ARTICLE)

Check for updates

Audit of consecutive cases of mortality in emergency department of a tertiary hospital in south eastern Nigeria

Aguocha Uche B [1], Njoku Patrick U [2,*], Kalu Stephen A [3], Ogbonna Stanley U [4], Aguocha Grace U [5], Achor Goerge O [6], Chuku Abali [7] and Njoku Roseline AN [8]

[1] *Orthopaedic Unit, Department of Surgery, Federal Medical Centre, Umuahia Nigeria.*
[2] *Department of Family Medicine, Federal Medical Centre Umuahia, Nigeria.*
[3] *Emergency Department, Federal Medical Centre Umuahia, Nigeria.*
[4] *Department of Internal Medicine, Federal Medical Centre Umuahia, Nigeria.*
[5] *Department of Psychiatry, Federal Medical Centre Umuahia, Nigeria.*
[6] *Urology Unit, Department of Surgery, Federal Medical Centre Umuahia, Nigeria.*
[7] *Department of Ophthalmology, Federal Medical Centre Umuahia, Nigeria.*
[8] *Department of Pharmacy, Federal Medical Centre Umuahia, Nigeria.*

World Journal of Biology Pharmacy and Health Sciences, 2023, 15(01), 145–151

Publication history: Received on 30May 2023; revised on 15 July 2023; accepted on 17 July 2023

Article DOI: https://doi.org/10.30574/wjbphs.2023.15.1.0304

Abstract

Introduction: Too many avoidable deaths have been noted in Nigeria. The Emergency Department (ED) mortality rate is a good assessment of the adequacy of the clinical care state of any hospital and in turn the survival probability of any critical ill patient attending that ED.

Materials and methods: This study was a retrospective one involving the review of records of all the one hundred consecutive deaths seen between June 2012 and February 2013 in the ED. All those brought in dead were excluded from the study. The data collected was simply analyzed.

Results: There were 71 males (71%) and 29 females (29%) with ratio of 2.4: 1.0. The age range of dead subjects was 11 years and above. The major cause of deaths in the study was medical conditions (65%) with a preponderance of cardiovascular deaths (49.23%).

Road traffic accident (RTA) was the major cause of trauma deaths (78.98%). Pedestrians and drivers were the most affected in RTA deaths (40% each). Deaths from malignancies constituted 43.75% of the non-traumatic surgical deaths. Majority of the deaths (74%) occurred within the first 24 hours of admission.

Conclusion: The mortality rate in the ED is vital in predicting the survival chance of any critically ill- patient attending it. Pre- hospital care and establishment of trauma teams in the hospitals will go a long way in reducing deaths tolls in the ED. Also the ED should be prepared to cope with the challenges of cardiovascular emergencies.

Keywords: Accident; Trauma; Death; Causes; Hospital

1. Introduction

Too many avoidable deaths have been noted in Nigeria [1]. The Emergency Department (ED) is one of the major entry points of patients especially those requiring urgent clinical attention into the health system of any hospital [2,3]. The

*Corresponding author: Njoku Patrick U; E-mail: njokupu@gmail.com

prompt management of these patients apart from the availability of qualified and adequate manpower, equipments and infrastructure is critical to their survival and quick recovery.

The ED mortality rate is a good assessment of the adequacy of the clinical care state of any hospital and in turn, the survival probability of any critical ill patient attending that ED. The interval between patient presentation and attendance by a clinician is vital in reducing mortality rate in the ED. The time lapse between the onset of the clinical problem or trauma and presentation at the ED varies [4]. This is a critical issue in the management and outcome of ED patients. Generally, the mortality among ED patients has been related to the quality of care they receive, availability of functional resuscitation equipments and materials they receive and the proximity to the hospital among other things.

There are many different causes of deaths encountered in the ED, and the frequencies of causes of deaths vary from centre to centre [5]. Trauma cases have been found to contribute less than the medical emergency cases seen in the ED [6]. Deaths from cardiovascular diseases have been observed to be the commonest mortalities while road traffic accidents (RTA) are the major causes of trauma deaths in the ED [6].The aim of this study was to provide data for further evaluation and improvement of the ED and to prompt clinical governance, policy makers and health care providers to pay attention to the health needs of patients needing emergency health care services.

2. Material and Methods

This study was carried out in the ED of Federal Medical Centre Umuahia Nigeria. The ED attends to all emergency cases except paediatric medical emergencies. Umuahia is the capital of Abia State and is located in the south east geopolitical zone of Nigeria. The hospital is highly patronized by patients from the neighboring states especially Imo State. The major tribe in the city is Ibo, although there are other tribes like Yoruba, Hausa/Fulani, Efik/Ibibio and Tiv. Umuahia has few industries, hotels and many schools.

This study was a retrospective one involving review of records of all the one hundred consecutive deaths seen between June 2012 and February 2013 in the ED. All those brought dead were excluded from the study. The proforma developed by the researchers was used to collect information on age, sex, duration of admission before death, cause of death, status of the dead patients in RTA and type of non-trauma surgical condition. The data collected was simply analysed. The approval of the hospital ethics committee was obtained.

3. Results

There were 71 males (71%) and 29 females (29%) with a ratio of 2.4:1.0 respectively. The age range of the dead subjects was 11 years and above. The majority of the deaths were in the age range of 51 – 60years and constituted 22% of the mortalities.

Table 1 Causes of deaths

Causes of death	Frequency (No)	Percentage (%)
Trauma	19	19
Medical condition	65	65
Non-trauma surgical condition	16	16
Total	100	100

The major cause of death in the study was medical conditions (65%).

The major cause of trauma deaths in the study was Road Traffic Accident (78.98%)

Table 2 Causes of trauma deaths

Causes of trauma death	Number of cases (No)	Percentage (%)
RTA (bus, car, motorcycle, tricycle)	15	78.95
Stab Injury	1	5.26
Gunshot Injury	2	10.53
Workplace related death	1	5.26
Total	19	100.00

Table 3 Status of the patients that died from RTA

Status of the RTA dead patient	frequency (No)	Percentage (%)
Passenger	3	20
Pedestrian	6	40
Driver	6	40
Total	15	100

Table 4 Medical causes of death

Causes of death	Total (No)	Percentage (%)
Bleeding disorder	1	1.54
Chronic obstructive airway disease	1	1.54
Cardiovascular problem	32	49.23
Renal failure	3	4.62
Diabetic complication	9	13.84
Seizure disorders	1	1.53
HIV/AIDS	10	15.38
Liver disease	1	1.54
Pulmonary tuberculosis	2	3.08
Sepsis	3	4.62
Tetanus	2	3.08
Total	65	100.00

Table 5 Causes of Non- traumatic conditions of death

Causes of death	Frequency (No)	Percentage (%)
Acute abdomen	6	37.50
Gastro-intestinal bleeding	1	6.25
Pregnancy complications	2	12.50
Malignancy	7	43.75
Total	16	100.00

Table 6 Trimodal pattern of death among trauma patients

Duration of admission	Frequency (No)	Percentage (%)
Less than 1 hour	5	26.3
1- 4 hours	8	42.1
More than 4 hours	6	31.6
Total	19	100.00

Table 7 Duration of admission before death for non-traumatic surgical and medical conditions

Duration of admission (hours)	Frequency (No)	Percentage (%)
0 -24	54	66.67
25 - 48	15	18.52
49 – 72	5	6.17
Over 72	7	8.64
Total	81	100.00

Table 8 Duration of admission in the ED before death for all the one hundred (100) consecutives mortalities

Duration of admission before death (in hours)	Frequency (No)	Percentage (%)
0 -24	74	74
25 - 48	13	13
49 – 72	6	6
Over 72	7	7
Total	100	100

4. Discussion

The majority of the deaths were in the age range of 51 – 60 years and constituted 22% of the mortalities. This could be attributed to the fact that most chronic non-communicable diseases like cardiovascular conditions cause death within this age range as was observed in this study. However, this finding is contrary to observation made in Port-Harcourt city Nigeria in which most of the mortalities occurred in the age ranges of 20-29 years and 30-39 years [6]. Also the finding was not in tandem with that found in Lagos Nigeria in which mortality was highest among the 20-45 years age range and the age group of 71-80 most affected in Pleven Bulgaria.[7,8]

The males constituted 71% of the mortalities recorded in this study. The males are more involved in risk taking and violent activities than females and this could be attributed to why there was a preponderance of male deaths than females. The preponderance of male mortality in the ED has been reported by other researchers in Port-Harcourt Nigeria [6]. In the study the male mortalities constituted 59.4% of the total deaths in the ED. Also in Abakaliki Nigeria and Addis Ababa Ethiopia researchers found that more deaths occurred in males than females in the ED. [9,10]

The causes of the mortalities observed in this study were trauma, non-trauma surgical and medical conditions. The medical conditions constituted majority of deaths and this was followed by trauma mortalities. This finding is similar to that documented in Port-Harcourt Nigeria [6].The study was a retrospective review of deaths in the ED involving 446 mortality cases. The preponderance of medical mortalities in this study could be attributed to the fact that this is a third world country and most of the people are living below poverty level of one dollar per day and thus cannot afford proper

health care services. Also, many of the health facilities are poorly equipped with many essential requirements in short supplies and there are many bad roads making hospital accessibility poor. Thus many patients arrive hospitals highly compromised health wise with resultant increase in mortality. In Kenya, it was reported that the poor state of preparedness by public hospitals to receive emergencies was supported by observation that many essential supplies were in short supply [11].

Road traffic accident was the major cause of trauma mortality and it constituted 78.98% of the trauma deaths and this was followed by gunshot injuries (10.53%).Pedestrians and passengers were the major patients involved in RTA deaths. RTA as the major cause of trauma deaths may be a reflection of the fact that many vehicles on our roads are old and not properly maintained with many having faulty tyres, breaking systems and lights. Also, poor driving and use of telephone handsets while driving and driving under the influence of alcohol and hard drugs might be contributory to this scenario. This finding is in tandem with that established in Benin City Nigeria in which the most common cause of traumatic deaths was motor vehicle crashes [5]. Also this finding is consistent with that found in the review of trauma deaths in an accident and emergency department in England [12]. In the study, RTA caused 46 out of the 56 trauma deaths. Similarly, the prospective study done in the emergency department of a hospital in Calabar, Nigeria is in agreement with this finding [4] .In the study, RTA accounted for 80.3% of the trauma deaths.

Pedestrians and passengers were the most involved in the RTA deaths in this study. This could be attributed to the fact that most of our roads do not have pedestrian walkways and thus both vehicles and pedestrians share same roads with high predisposition to vehicular accidents. Most vehicles on our road have faulty seat belts and even when these belts are functioning, the drivers and other occupants fail to use them. Also, overloading of vehicles and carrying of loads and passengers on same vehicle seat have contributed more mortalities in the event of vehicular crashes in this part of the world. This observation was in consonant with that observed in England in which pedestrians and car occupants constituted majority of the mortalities in RTA [12]. The enforcement of road traffic regulations, health education and improving the social economic standard of the generality of the population would go a long way in reducing mortalities due to RTA [13].

The majority of the deaths (74%) occurred within 24 hours in the ED. This could be a reflection of the degree of severity of their conditions and delay in seeking medical attention. Also, the poverty among patients and their families to finance treatment and inadequate public health education could be contributory [14]. This finding is similar to that observed in a prospective study on preventable trauma deaths in the ED in Ilorin Nigeria in which 73.7% of the deaths occurred on the first day of admission in the ED [14]. This was partly attributed to inadequate resuscitation during transportation or pre-hospital phase, as there was no emergency medical services during transportations. Also this finding was in tandem with the observation in a study done on surgical emergency deaths in a teaching hospital in Lagos Nigeria in which more patients involved in trauma died within 24 hours of presentation.[15]

In this study, most of the trauma deaths (42.1%) occurred within four hours of admission. This could be attributed to lack of pre-hospital care, poor transportation to the hospital and delay in movement of the trauma victims to appropriate hospitals. This observation is similar to that observed in Benin City Nigeria in which the majority of the trauma deaths occurred within the first six hours in the ED [5]. Also in Ilorin Nigeria, more than half of the trauma deaths occurred within six hours of admission in the ED in a study on preventable trauma deaths [14].

The medical causes of deaths constituted 65% of the deaths in this study. Mortalities related to cardiovascular problems formed 49.23% of these medical deaths. These mortalities could be attributed to delays in seeking health care services in appropriate health facilities and financial constraints in seeking appropriate health care management. This finding is in conformity with that documented in the ED of a hospital in Port-Harcourt Nigeria in which 66.8% of the deaths were due to medical causes and stroke was responsible for 24.5% of the deaths [16]. This observation was contrary to that found in Zaria Nigeria in which tetanus had highest case of mortality rate of 45%.[17]

Among the non-trauma surgical causes of mortality in this study, malignancies (43.75%) and acute abdomen (37.5%) were the major conditions. This observation could be a reflection of late presentation at appropriate health facilities and ignorance on the part of the patients and families.

The majority of the non-trauma surgical and medical conditions (66.67%) died within 24 hours of admission in the ED. Some of the deaths could had been as a result of delay in or inappropriate resuscitation and the severity of their conditions as these patients were first seen by junior doctors and non-medical specialist in the ED. This calls for the establishment of faculty of Emergency Medicine at the Postgraduate Medical College in the country to help train appropriate manpower that will aid in reduction of this death toll.

5. Conclusion

The ED is a very important venue for determining the quality of health care services that a hospital can offer. The mortality rate in the ED is vital in predicting the survival chance of any critically ill-patient attending it. It is recommended that governments at all levels should make efforts and develop policies that will help control the modifiable risk factors of both the non communicable and communicable conditions that are predominantly involved in these mortalities. The various causes of death in the ED as was observed in this study deserve serious attention in order to reduce the mortality toll being seen here. The various governments should take urgent decisive actions in controlling RTA and other causes of deaths in the ED.

Pre-hospital care and establishment of trauma teams in the hospital will go a long way in reducing death tolls in the ED. Adequate number of experienced medical staff should be provided in the ED and extra staff reserved for when there is mass casualties or workload is excessive for those already on duty. Also, the ED should be prepared to cope with the challenges of cardiovascular emergencies.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to disclose.

Statement of ethical approval

This was received from the hospital ethics committee.

Funding

No funding was received.

Statement of informed consent

This was a retrospective study.

References

[1] Ogedegbe C. (2009) Emergency medical services in Nigeria: a coordinated national strategy. Nig Med J (Suppl 1): 65-9

[2] Sogut O, Sayhan MB, Gokdemir MT, Boleken ME, Behcet Al B, Kose R, et al (2011). Analysis of hospital mortality and epidemiology in trauma patients: a multi-center study, J Curr Surg, 1(1):19-24.

[3] Beckett MW, Longstaff PM, McCabe MJ, Sulch DA, Ward MJ (1987). Deaths in three accident and emergency departments. Achives Emerg Med, 4(4):227-32.

[4] Ugare GU, Udifon W, Bassey IAE, Oyo-Ita AE, Egba RN, Asuquo M, et al (2012). Epidemiology of death in the emergency department of a tertiary health centre south-south of Nigeria. Afri Health Sci,12(4):530-7

[5] Osime OC, Ighedosa SU, Oludiran OO, Iribhogbe PE, Ehikhamenor E, Elusoji SO (2007). Patterns of trauma deaths in an Accident and Emergency Unit. Prehosp Disast Med, 22(1):75-8

[6] Ekere AU, Yellowe BE, Umune S (2005). Mortality patterns in the accident and emergency department of an urban hospital in Nigeria. Nig J Clin Pract, 8(1):14-8.

[7] Olusegun-Joseph AD, Akande O, Otrofanowei E, Nwoye EO, Olapade OB, Ajuluchukwu JN (2021). Medical mortality in an emergency department in Nigeria: the transition is obvious. Afri Health Sci, 21(1): 172-9.

[8] Stefanovski PH, Radkov RV, IIKov TL, Tonchev TP, Mladenova TY, Manchev KV, et al (2017). Analysis of mortality in the emergency department of a university hospital in Pleven. J Intern Med Research, 45(5): 1553-61.

[9] Eze CO, Kalu UA (2019). Pattern of mortality in medical emergency room: experience at Abakaliki Nigeria. J Metabolic Syndrome, 8(1): 248.

[10] Yosha HD, Tadele A, Teklu S, Melese KG (2021). A two-year review of adult emergency department mortality at Tikur Anbesa Specialized Tertiary hospital Addis Ababa Ethiopia. BMC Emerg Med, 21(1):33

[11] Macharia WM, Njeru EK, Muli-Musiime F, Nantulya V (2009). Severe road traffic injuries in Kenya, quality of care and access. Afri Health Sci, 9(2):118-24.

[12] Underhill TJ, Finlayson BJ (1989). A review of trauma deaths in an accident and emergency department. Arch Emerg Med, 6(2):90-6.

[13] Ahmed A (2009). Trends in emergency surgical admissions in a tertiary health centre in Nigeria. West Afr J Med, 28(2):106-9.

[14] Solagberu BA, Kuranga SA, Adekanye AO, Ofoegbu CPK, Udofia US, Abdur-Rahman LO, et al (2003). Preventable trauma deaths in a country without emergency medical services. Afri J Trauma, 1:39-44.

[15] Akinmokun OI, Afolayan MO, Ojo OA (2019). Surgical emergency deaths in a teaching hospital in Lagos, Nigeria. Nig J Orthopaed Trauma, 18(1): 4-8.

[16] Onwuchekwa AC, Asekomeh EG, Iyagba AM, Onung SI (2008). Medical mortality in the accident and emergency unit of the University of Port-Harcourt Teaching Hospital. Nig J Med, 17(2):182-5.

[17] Jamoh BY, Abubakar SA, Isa SM (2018). Morbidity and mortality profile of patients seen in medical emergency unit of a teaching hospital in Nigeria: a 4-year audit. Sahel Med J, 21(4): 213-7.

[18] Nkpozi MO, Adukwu BU, Onwuchekwa UN, Chikezie JA, Aluka C (2020). Profile and outcome of medical emergencies in a teaching hospital in the commercial city of Aba, southeast Nigeria. J Biomed Res Clin Pract, 3(3): 415-21.