



Original Research Article

Pattern of mortality in medical wards: experience at Abakaliki Nigeria

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The common conditions admitted in medical wards include heart failures, stroke, poorly controlled diabetes, chronic liver diseases, chronic kidney diseases and Acquired immune deficiency syndrome (AIDS). The mortality rate of medical admission in developing countries is higher than that in the developed world due to epidemiologic transition, high rate of poverty, illiteracy, late presentation of patients and lack of well coordinated health service delivery. There has not been any study on mortality pattern in medical wards in Abakaliki, Southeastern Nigeria. It is against this background that we embarked on this study of the mortality pattern in medical wards of Alex Ekwueme Federal Teaching Hospital Abakaliki. This was a retrospective observational Hospital based study. The admission, discharge and mortality registers of the Male and Female Medical Wards were used to extract information on biodata, diagnosis, duration and outcome of all admissions from January to December 2019 (12months). A total of 1557 (male- 839, female- 718) patients were admitted over the study period of 12 months with mortality rate of 11.88% (m:f= 5:4). Stroke (19%), AIDS/TB (17%), liver (16%), heart (15%), and kidney (7%) diseases were the predominant cause of mortality with non-communicable diseases accounting for 56%. The mean admission duration was 9.32% while 58.38% died within the first week. The mortality rate of medical admission was high with double burden of both non-communicable and communicable diseases and constituted of mainly stroke, HIV/TB, liver, heart and kidney diseases which are essentially preventable. Most of the deaths occurred within the first week of admission.

Keywords: Abakaliki, medical wards, mortality, pattern, south-eastern Nigeria.

List of Abbreviations

HIV- Human immune deficiency virus
AIDS- Acquired immunodeficiency virus
TB- Tuberculosis

INTRODUCTION

Medical wards are the wards in hospitals where patients that have medical conditions are admitted and managed as inpatients. They are usually made up of male and female wards in order to ensure some level of privacy for the

patients. They are usually relatively busy wards as medical cases constitutes majority of the inpatient cases in most hospitals (Ogunmola and Olamoyegun, 2014). The patients are usually managed by the health team which consists of

consultant physicians, resident doctors, house officers, nurses and other members of allied health workers (physiotherapists, dieticians, pharmacists etc) as may be necessary in tertiary hospitals with full complement of staff. The sources of admission include emergency room, outpatient clinics and other sections of the hospital (Choudhuri et al., 2017). The very severe cases are usually moved to the intensive care unit to ensure close monitoring and interventions with life support machines. The common conditions admitted in medical wards include heart failures, stroke, poorly controlled diabetes, chronic liver diseases, and Acquired immune deficiency syndrome (AIDS) (Eze et al., 2013; Agomuoh and Unachukwu, 2007; Elias and Mirkuzie, 2010).

The mortality rate of medical admissions in developing countries is higher than that in the developed world due to double disease burden of both non communicable diseases and communicable diseases (Eze et al., 2020; Case and Deaton, 2017). The high mortality rate is also due to poverty, illiteracy, late presentation of patients, unavailability of well trained staff and lack of well coordinated health service delivery (Eze et al., 2020).

In Africa and other developing countries, the reported mortality rates ranged from 6 to 29% with male preponderance (Banerjee et al., 2019; Chijioke and Kolo, 2009; Ufoaroh et al., 2019; Hadiza, 2018; Olarinde and Olatunji, 2014). The common conditions identified as responsible for the mortalities are cerebrovascular diseases, heart diseases, diabetes mellitus, renal diseases, AIDS and liver diseases.

This study was conducted at Alex Ekwueme Federal University Teaching Hospital Abakaliki, a tertiary health facility in Abakaliki South-eastern Nigeria. This hospital takes referral from Ebonyi state and its environs. However, the mortality pattern of admissions in medical wards in this hospital is not known. Therefore, this study was undertaken to determine the mortality pattern of admissions in medical wards in a tertiary hospital in Abakaliki and compare it with that elsewhere in the country with the view of using the data generated as a baseline for health policy formation and future studies.

MATERIALS AND METHODS

This was a retrospective observational study that was undertaken in the Medical wards of Alex Ekwueme Federal University Teaching Hospital Abakaliki, a tertiary hospital in Abakaliki Nigeria. The hospital is a referral hub for Ebonyi state, and other adjoining states with reported yearly medical admission rate of 1247 in 2013 (Eze et al., 2013). The hospital has male and female medical wards, with 50 beds each and bed occupancy rate of 70%. The patients are admitted and managed by different medical subspecialist team made up of the consultant physician, the resident doctors and the house officers. The nurses run three shift duties per day and a nurse attends to maximum of four patients in a shift. The patients were admitted from

emergency rooms, medical outpatient clinics (MOPC), ICU and referral from other departments. Basic life support monitoring and therapeutic equipment like patient cardiac monitors, oxygen delivery system and pulse oximeters are available for patients need. Patients that deteriorate were transferred to the ICU for further management.

The admission, discharge and mortality registers of the medical wards were used to extract information on biodata (age, sex), admitting diagnosis, duration of admission and patients' outcome of all admissions from January to December 2019 (12months). The diagnoses were made by consultant physicians in different subspecialties with additional confirmatory laboratory investigations as required. The data were analyzed with Statistical Package for the Social Sciences (SPSS) version 25. The categorical variables were presented as proportions and percentages while numerical variables were presented as means and standard deviations. Chi-square with Yates correction was used to test for statistical significance and p-value of <0.05 as significant.

RESULTS

A total of 1557 (male 839, female 718) patients were admitted over the 12months period with mean monthly admission of about 130 patients.

Sixty one (3.9%) patients were discharged against medical advice while 1311 (84.2%) were discharged home when their clinical state improved.

One hundred and eighty-five (male 102, female 83) died over the study period giving a crude mortality rate of 11.88% with age range of 24-88years (mean age 58.43 ± 12.92 years). One hundred and thirty two (71%) of the mortality cases were between 30 and 69years (Table 1).

Non-communicable diseases accounted for 56% (103) while communicable diseases accounted for 44% (82) of the mortality. Stroke, Acquired immunodeficiency Syndrome/tuberculosis (AIDS/TB) complex, Liver disease, Heart failure, Kidney disease, Pneumonia, Diabetes mellitus and Meningoencephalitis were the most identified cause of mortality in descending order (Table 2). When the causes of mortality were grouped into medical subspecialties, Neurological, Gastroenterological, Infectious and Cardiovascular disorders were most prevalent. (Table 3).

The duration of admission of the mortality cases ranged from 1 – 56 days with mean duration of 9.32 ± 5.29 days. One hundred and eight (58.38%) of the patients died within the first week of admission while 77 (41.62%) died after the first week of admission.

DISCUSSION

The study described the pattern of mortality in medical wards of a tertiary hospital at Abakaliki Nigeria. The reported total admission rate of 1557 patients in 2019 was significantly higher than the previous report of 1247 in

Table 1. Age and sex distribution of the mortality

Age range (years)	Male n- (%)	Female n- (%)	Total N- (%)
18- 29	5 (2.70)	7 (3.78)	12 (6.48)
30- 39	14 (7.57)	9(4.86)	23 (12.43)
40- 49	20 (10.81)	15 (8.10)	35 (18.91)
50- 59	19 (10.27)	12 (6.48)	31 (16.75)
60- 69	21 (11.35)	22 (11.89)	43 (23.24)
70- 79	13 (7.02)	11 (5.94)	24 (12.97)
80- 89	8 (4.32)	7 (3.78)	15 (8.10)
90- 99	2(1.08)	0 (0)	2 (1.08)
Total	102 (55.14)	83 (44.86)	185 (100)

Table 2. Causes of mortality

Disease	Male n (%)	Female n (%)	Total N (%)
Stroke	18 (9.73)	18 (9.73)	36 (19.46)
AIDS/TB	13 (7.03)	19 (10.27)	32 (17.30)
Liver disease	21(11.35)	8 (4.32)	29 (15.67)
Heart disease	17 (9.19)	10 (5.40)	27 (14.59)
Renal disease	8 (4.32)	5 (2.70)	13 (7.02)
Pneumonia	3 (1.62)	8 (4.32)	11 (5.93)
Diabetes mellitus	5 (2.70)	4 (2.16)	9 (4.86)
Meningoencephalitis	3 (1.62)	3 (1.62)	6 (3.24)
Hematological disorders	3 (1.62)	2 (1.08)	5 (2.70)
Gastrointestinal bleeding	3 (1.62)	1 (0.54)	4 (2.16)
Others	8 (4.32)	5 (2.70)	13 (7.02)
Total	102 (55.14)	83(44.86)	185 (100)

Table 3. Mortality according to subspecialty

Subspecialty	Male n- (%)	Female n- (%)	Total N- (%)
Neurology	21 (11.35)	21 (11.35)	42 (22.70)
Gastroenterology	24 (12.97)	9 (4.86)	33 (17.83)
Infectiology	13 (7.03)	19 (10.27)	32 (17.30)
Cardiology	17(9.19)	10(5.40)	27 (14.59)
Nephrology	8 (4.32)	5(2.70)	13 (7.03)
Pulmonology	3 (1.62)	8 (4.32)	11 (5.94)
Endocrinology	5 (2.70)	4 (2.16)	9 (4.86)
Hematology	3 (1.62)	2 (1.08)	5 (2.70)
Communicable diseases	45 (24.32)	39 (21.08)	84 (45.40)
Non-communicable diseases	57 (30.81)	44 (23.78)	101 (54.60)

Table 4. Duration of admission

Duration of admission (days)	Male	Female	Total	p-value
≤ 7	55	53	108	0.2250
>7	47	30	77	
Total	102	83	185	

2013 (Eze et al., 2013). This is a reflection of the growth in the capacity of the hospital as more specialists were recruited over the period and also more services became available like echocardiography, electroencephalography, hemodialysis and gastrointestinal endoscopy. The total admission rate is similar to that reported from other tertiary hospitals of similar status in Nigeria (Chijioko and

Kolo, 2009; Hadiza, 2018; Arodiwe et al., 2014).

The mortality rate in this study was 11.88% with male preponderance. The mortality rate was similar to 12.3% and 14% reported from south-west and south-south regions of Nigeria respectively (Olarinde and Olatunji, 2014; Udonwa et al., 2009) but lower than 21%- 28% reported from other centres in Nigeria (Chijioko and Kolo,

2009;Ufoaroh et al., 2019; Hadiza, 2018; Arodiwe et al., 2014). The relatively lower mortality rate in this study could result from the exclusion deaths in intensive care unit which was reported to be 40.8% over same period (Eze et al., 2020) and also the practice of subspecialty care where patients are usually promptly sorted, referred to and reviewed by the corresponding consultants. The male preponderance of the mortality in this study is similar to the report from other studies and generally represents male preponderance in the admission (Chijioke and Kolo, 2009; Ufoaroh et al., 2019, Hadiza, 2018; Olarinde and Olatunji, 2014; Arodiwe et al., 2014; Udonwa et al., 2009). Also most men decline to go to the hospital until the illness becomes very severe which is both cultural and in the nature of men to deny illness as a mark of strength in Africa (Eze and Kalu, 2019). This makes them to usually present to the health facility in an advanced stage of their illness with attendant higher mortality. Furthermore, the risk factors for mortality in this study were predominantly cardiovascular related which are more prevalent amongst men (Mukadas and Misbau, 2009).

The age range of 24- 88years with mean age of 58years were similar to reports from other studies within Nigeria (Chijioke and Kolo, 2009; Ufoaroh et al., 2019, Hadiza, 2018; Olarinde and Olatunji, 2014; Arodiwe et al., 2014). About 71% of the deaths occurred amongst those between the age range of 30- 69years while 22% occurred in those 70years and above. This showed that majority of the deaths occurred amongst the workforce age group which portends great danger to the society by depletion of the productive sector. The same trend was reported previously in admission pattern in same centre (Eze et al., 2013).

Non-communicable diseases constituted predominant (56%) proportion of the total mortality in the study with communicable diseases accounting for 44%. This is in tandem with similar studies within Nigeria and other developing countries (Hadiza, 2018; Arodiwe et al., 2014; Banerjee et al., 2019). This is in keeping with epidemiologic transition from previously predominantly communicable diseases to current trend of predominantly non-communicable diseases in Sub-Saharan Africa (Stower, 2019). This is also another dangerous trend of double disease burden as AIDS, tuberculosis, malaria and other infectious diseases are still quite prevalent. This puts heavy strain on the economy and health sector of the developing nations. The risk factors involved in the epidemiological transition include biological factors (microorganisms), environmental factors, social, cultural and behavioural factors and the practices of modern medicine (Wahdan, 1996). The above is related to the change from traditional African lifestyle and dietary pattern to the Western pattern of increased urbanization, reduced physical activity, obesity, and use of refined food (Eze et al., 2013).

Stroke was the most preponderant (19%) cause of mortality with equal sex distribution. This report is in tandem with some other studies in the developing countries (Olarinde and Olatunji, 2014; Udonwa et al., 2009; Banerjee et al., 2019). This is a reflection of high

burden of stroke and cardiovascular risk factors as previously reported at Abakaliki (Eze et al., 2020; Eze et al., 2013). Stroke was also reported to be the predominant cause of mortality in both emergency room and intensive care unit of the study centre (Eze et al., 2020; Eze and Kalu 2019). This underscores the impact and position of stroke as a public health concern in Abakaliki Nigeria in particular and Sub-Saharan Africa at large. Stroke patients were managed in the general medical wards with other patients as stroke ward is nonexistent at the centre. It has been documented that stroke patients that are managed in stroke wards usually have a better outcome (Ruud et al., 2005). The equal sex distribution in mortality results from the reported worse outcome of stroke in female patients despite higher prevalence in men (Appelros et al., 2009).

HIV with or without tuberculosis accounted for 17% of the mortality and was more prevalent in females. This is similar to other studies in developing countries (Chijioke and Kolo, 2009; Ufoaroh et al., 2019, Hadiza, 2018; Olarinde and Olatunji, 2014; Arodiwe et al., 2014). This shows that AIDS and tuberculosis are still of great public health concern in Nigeria and other developing countries. The female preponderance of mortality from AIDS/TB complex is a reflection of higher female prevalence of HIV (Awofala and Ogundele, 2018). Also poverty and deprivation which are prevalent amongst women in Sub-Saharan Africa makes them more vulnerable to HIV morbidity and mortality (Onyeneho, 2009).

Liver diseases (16%), heart diseases (15%), and kidney diseases (7%) were other diseases noted to cause mortality in the study with male preponderance. This is in tandem with other studies (Chijioke and Kolo, 2009; Hadiza, 2018; Olarinde and Olatunji, 2014). The male preponderance is a reflection of higher male prevalence of the conditions (Eze et al., 2013).

Other diseases identified include pneumonia (6%), poorly controlled diabetes mellitus (5%), meningoencephalitis (3%), hematological disorders (3%) and gastrointestinal bleeding (2%). Their contribution to the mortality reflects their relatively low prevalence (Eze et al., 2020).

The causes of mortality were grouped into medical subspecialties. Neurological (22%), Gastroenterological/Hepatological (18%), Infectious (17%), and Cardiovascular (15%) disorders were most prevalent. This is similar to other studies in Nigeria (Chijioke and Kolo, 2009; Ufoaroh et al., 2019, Hadiza, 2018; Olarinde and Olatunji, 2014; Arodiwe et al., 2014; Udonwa et al., 2009). It is a reflection of the prevalence and case fatality rates of the diseases (Eze et al., 2013).

The mean admission duration of the mortality cases was 9.32 ± 5.29 days and 58.38% died within the first week of admission. This is similar to the mean admission duration of 9.94 days and 59.5% deaths within the first week reported by Ufoaroh et al in Awka Southeast Nigeria (Ufoaroh et al., 2019). This shows that most of the deaths occurred early within the admission and highlights

the need for early concerted efforts in management of admitted medical patients.

The mortality rate of admissions in medical wards of a tertiary hospital in Abakaliki Nigeria is high, though not as high as reported in most developing countries. It affected predominantly the productive age group with male preponderance and double burden of both non-communicable and communicable diseases. Stroke, HIV/TB, liver, heart and kidney diseases were the most prevalent causes of mortality. Most of the patients died within the first week of admission.

There is need to sustain subspecialty patient care at the centre as it promotes better patients care with attendant lower mortality. There is also need to create stroke ward for management of acute stroke patients for better outcome.

Furthermore, there is need to channel much efforts in primary prevention of stroke, HIV, liver, heart and kidney diseases which will help in no small measure towards reduction of the burden and mortality of above conditions. This will be done in collaboration with public health and family physicians, religious leaders and traditional rulers to ensure more grassroots coverage. Finally, patient triage system should be strengthened at point of admission to ensure proper distribution of scarce health resources to the patients especially during the first week of admission as most deaths occur during this period.

Limitations

This is a retrospective study with attendant limitations. Some of the data sought for in the admission, discharge and mortality registers were incomplete.

Conflict of Interest

None

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The authors funded the study

Authors' contributions

Chukwuemeka O EZE- Designed the study. Wrote the introduction, methodology, data collection and analysis, and discussion

Francis C OKORO- Data collection and analysis

Monday NWOBODO- Data collection and analysis

Thomas NNAJI- Data collection and analysis

Godsent ISIGZO- Data collection and analysis

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