

MORTALITY PATTERNS IN THE ACCIDENT AND EMERGENCY DEPARTMENT OF AN URBAN HOSPITAL IN NIGERIA

A. U. Ekere, B. E. Yellowe, S. Umune,

Division of Orthopedics/Trauma Dept of surgery University of Port Harcourt Teaching Hospital Port Harcourt

ABSTRACT

Objective: The accident and emergency (A & E) department of any hospital provides an insight to the quality of care available in the institution. The University of Port Harcourt Teaching Hospital (UPTH) is a foremost institution in the South-South geopolitical region of Nigeria, servicing a core population of about 5 million people. The aim of this review was to highlight the demographic patterns of mortality, time spent before death in the emergency room.

Methods: A 3 year retrospective review, covering April 2000 – March 2003, of patients attended to in the Accident & Emergency department of University of Port Harcourt Teaching Hospital was carried out. Casualty records including attendance registers, Nurses' report books and death certificates were used to extract demographic indices, causes of death and time from arrival to death in the Accident and Emergency Unit. Multiway frequency tables were used for analysis.

Results: Of the 22,791 patients seen during the study period, 446 died, giving a crude mortality rate of 2 percent. The male to female ratio was 1.5:1; the trauma subset and the non-traumatic subset being 4.6:1 and 1.2:1 respectively. Most of the cases were of non-traumatic origin (79.8%), with the 20-49 age group being the most affected when all the cases were taken into consideration. However, the overall mean age was 33±9.4 years. The peak age in trauma deaths was 20-29 year, while that in non-traumatic deaths was 40-49 years. Some of the deaths (3.4%) could not be traced to any cause. Probably due to incomplete records or ignorance to the cause of death. Road traffic accidents and assaults were the commonest causes of traumatic death, accounting for 57.8% and 11.1% respectively. Bulk of the non traumatic deaths (25.2%) was from cardiovascular diseases. Most of the patients (70.9%) died within six hours of arrival in the accident and emergency, while 3.6% (16) were dead on arrival. The average time in the casualty before death was about 22.0 hours. Contributing factors to these deaths might include poor infrastructures on ground, inadequate transportation to hospital, delay in presentation and inadequate clinical exposure by the first line physicians in the accident and emergency department.

Conclusion: Improvement in management techniques might unravel the mysteries of death of unknown origin. Management of medical emergencies should be emphasized in the training of accident and emergency workers.

Key Words: Accident, emergency, death, traumatic, non-traumatic, Nigeria.

INTRODUCTION

The outcome of management of patients presenting in the accident and emergency (A & E) unit of any hospital is a known performance indicator of the standard of care in the particular facility^{1,2}. In the developing world, inadequacy of trained personnel and infrastructure, including equipments have contributed a lot to the occurrence of preventable deaths³⁻⁵.

Pre-hospital factors like the general practitioners' work load, distance of the patient to the A & E unit, primary illness or wounding, all affect patients morbidity and mortality^{1,6,7}. The greater loads of patient in the A & E are usually medical cases⁸.

This group also constitutes the greatest mortality group^{1,2,8,9}. Traumatic causes are mainly from road traffic accidents^{2,5,10}. The relatively lower mortality rate in trauma cases is due to the younger age group usually affected, which have tremendous inherent physical reserves.⁴ Excessive work load on casualty workers is likely to increase the probability of management errors, so does difficulty in diagnosis and delay in giving adequate treatment^{6,11}. Accident and emergency experiences can be used in health planning and improvement in qualitative care^{10,12}.

The University of Port Harcourt Teaching Hospital (UPTH) is in an urban setting. Port Harcourt, Nigeria is a cosmopolitan city consequent upon the oil and gas sector activities predominant in the city.

The aim of this study was to highlight the demographic indices, causes and time before death in the A & E unit of UPTH, Port Harcourt.

The cumulative male female ratio was 1.5:1

PATIENTS AND METHODS

A 3 year retrospective analysis was undertaken for deaths in the A & E unit. Period under review was April 2000 to March 2003. Casualty records including patients' attendance register, nurses' daily report books, death certificates were used to retrieve data. Multiway frequency tables and graphs were used for statistical analysis. The study had the limitations of a retrospective study.

RESULTS

Data analysis showed that 22,791 cases were attended to and 446 died, giving a crude death rate of 2 percent. Traumatic causes contributed 90/446 (20.2%) of the death, while medical emergencies were 356/446 (79.8%).

Table 1: Age and Sex Distribution

Age	No.		Total	%
	Male	Female		
Sex				
0-9			0	
10-19	22	13	35	
20-29	53	34	87	
30-39	55	32	87	
40-49	50	34	84	
50-59	32	25	57	
60-69	27	30	57	
70 and above	26	13	39	
Total	265	181	446	

In traumatic cases, the male female ratio was 4.6:1 while in medical emergencies it was 1.2:1. (Table 11)

Table II: Cause, Sex and Age Distribution of Traumatic Deaths

Age	0-9		10-19		20-29		30-39		40-49		50-59		60-69		70- above		Total	%
	M	F	M	F	M	F	M	F	M	F	M	F	M	F				
A.TRAUMATIC																		
a. RTA			6	2	13	1	10	1	6	3	3	1	3	3	2		54	60
b. Gunshot injuries					4		1										5	5.5
c. Other Assaults			1		4		1		1		1		1				9	10
d. Stab injuries						1									1		2	2.2
e. Burns					1		1										2	2.2
f. Falls			1		1		3		1								6	6.7
g. Post-Abortal					2		4										6	6.7
Sepsis			2		3		1										6	6.7
h. Domestic Accidents																		
Total	1	-	10	4	26	6	17	1	8	3	4	1	4	3	3	-	90	100
Total No. of Males	74																	
Total No. of Females	16																	

Male - Female Ratio = 74:16=4.6:1

Table III: Cause, Sex and Age Distribution in Non - Traumatic Cases

Age	0 - 9		10 - 19		20 - 29		30 - 39		40 - 49		50 - 59		60 - 69		70 - above		Total	%
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
B.NON-TRAUMATIC																		
a. Cardio vascular disease (incl. Hypertension & cardiac failure)			1		1	1	4	1	16	10	9	11	9	14	9	5	90	25.2
b. Sickle Cell disease				3	2	1	1										7	2.0
c. Neoplasia				1		1		3	1	1	3	2	1	2			15	4.2
d. Peptic ulcer disease			1			1			1	1				1			5	1.4
e. Pregnancy & Complications						1		4		1							6	1.7
f. Renal diseases (ind. Failure)			1	1	1	3	4	5	3	3	2		1	1	1	1	27	7.6
g. Liver Disease					3	1	7	2	3	3	2	2					23	6.5
h. Severe Anaemia				2		1		1	3	1	1						9	2.5
i. Infections			5	2	10	13	12	8	6	3	4	2	4	1	7	4	81	22.7
j. Parkinsonism														1			2	0.6
k Psychotic illness/epilepsy							1	1	1	1							4	1.1
l. D.M & Complications					2	5	2	2	4	6	4	6	5	6	3	3	48	13.4
m. Hernia													1		1		2	0.6
n. AIDS & HIV					1	1	4	3	1	1	1						12	3.4
o. Poisoning			2														2	0.6
p. Asthma					1								1	1	1	1	5	1.4
q. Chronic Alcoholism							1		1		2						4	1.1
r. Radiation & hypersensitivity reactions							1		1								2	0.6
s. Unknown				2	2	3	1	1	1					1	1		12	3.4
Total			10	11	23	32	38	31	42	31	28	24	23	27	23	13	356	100

The 20-49 age range was mostly affected (Table 1) and 70.9 percent of the entire patients died within 24 hours of arrival in hospital (Table 1V).

Table IV: Duration before Death

Time (Hours)	NO.	%
On Arrival	16	3.6
0-24	316	70.9
24-48	73	16.4
48-72	14	3.1
OVER 72	27	6.0
Total	446	100

The peak age distribution was 20-29 age groups in traumatic cases and 40- 49 in non-traumatic cases (Figure1).

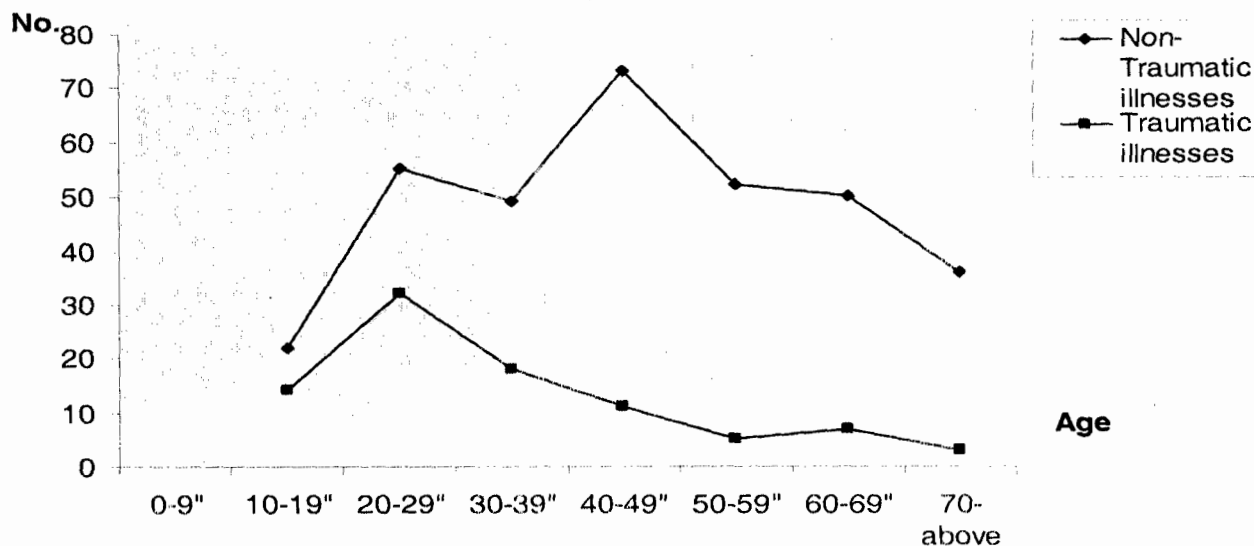


Figure 1: Age Distribution of Deaths

Commonest causes of death among the medical emergencies were cardiovascular diseases (including hypertension and cardiac failure (25.2%), infections (22.7%), and diabetic mellitus and its complications (13.4%) (Table III). In traumatic injuries most death were from road accidents (Table II)

DISCUSSION

In our study, the ratio of traumatic to non-traumatic causes of death was 1:4. The bulk of the non-traumatic causes were of medical origin which is the pattern worldwide^{1, 8, 9}. Road traffic accidents held its pride of place in traumatic injuries, with hypovolaemia (including those from head or multiple injuries) being the usual terminal exits^{1, 2, 9}.

The peak incidence was in 3rd to 5th decade of life with a male preponderance. This is similar to results from Nnewi¹, and Ile-Ife⁸, Nigeria. The peak age incidence was higher in the non-traumatic group, this is said to be due to the chronicity of these ailments, and their consequent manifestation in later life¹. The young adult males were more involved in traumatic injuries because of their love of adventure, risk taking and general restlessness^{3, 4}. This constitutes a major economic blow in any society.

Cardiovascular diseases, including hypertension and congestive cardiac failure were the commonest non-traumatic causes of death. This is similar to other series worldwide^{1, 8, 12, 13}. Infections and diabetic complications were second and third with 22.7 percent and 13.4 percent respectively, a pattern similar to other studies in our environment^{1, 8}. Some of our deaths were of unknown aetiology. Part of the mystery is buried in the under-development of our diagnostic techniques, which in combination with

heavy work load on the emergency room staff can increase the probability of management errors. McDermott et al¹⁴ found that in Australia, 68 percent of problems leading to deaths resulted from management errors and 21 percent to system inadequacies. These management errors include technique errors, diagnosis delays and diagnosis errors^{14, 15}. Sixty six percent of their deaths were assessed as non-preventable, 4 percent as preventable and 30 percent as potentially preventable.

Bulk of the patients that arrived alive in hospital (70.9%) died within 24 hours. These would have been very ill or terminal patients, most of them "pushed over" by private practitioners, other health facilities, traditional healers and fake prayer houses^{1, 2, 3, 4}. Pre-hospital causes of death include transportation, which contributes also to the outcome^{7, 9, 14, 17, 18}. Ambulance services in Rivers State is at its infancy, and most of the ambulances have no life support facilities to handle the patients en route to the hospital.¹⁸

Our crude mortality rate of 2 percent was low compared to studies in Nnewi¹ and Owo² Nigeria, and high compared to trauma deaths in Royal Infirmary of Edinburgh with 0.0002 percent¹³. Probably, our low mortality rate might be due to closure of surgical and medical outpatients in the late afternoons, evenings, and weekends making the accident and emergency the only consulting unit in the hospital attending to some "cold" cases¹.

In conclusion, the accident and emergency department is the eye of any hospital, and a determining step in the outcome of patients visiting the hospital. Lack of proper ambulance services may be responsible for delays and death on arrival.¹⁸

Inadequate equipping and manpower in the developing countries are added loads to preventable mortality of these patients^{16,17}. Our mortality rate is quite encouraging albeit more research is needed to have adjusted and more reflective results. Due to the high medical mortality, the training of emergency room workers must emphasize this aspect.

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