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MORTALITY PATTERN IN MEDICAL WARDS IN CHUKWUEMEKA ODUMEGWU OJUKWU UNIVERSITY TEACHING HOSPITAL, AWKA, NIGERIA

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ABSTRACT

Background and Objectives: Mortality pattern may reflect disease burden and influence medical policy formulation and implementation. This study sought to evaluate mortality and the influence of morbidity in patients in the medical wards in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), Awka Nigeria. **Methodology**: In this retrospective study on mortality in the medical wards, patients' case files, admissions and discharge registers were pulled. Information on age, gender, diagnosis, race, clinical state, duration on admission, serum creatinine, serum urea, PCV, serum albumin, were obtained, and the data analyzed. **Results**: The admissions were 1583 and patients deaths 325(20.5%) comprised of 167 (54.2%) males and 158 (45.8%) females. Only 153 deaths had complete data with mean age of 54.58 ± 17.40 years; mean duration on admission 9.94 ± 13.20 days and 59.5% of deaths occurred in the first 7 days; 90 (58.8%) were 31-60years. Anemia was present in 64.8% of male deaths and 54.8% of female deaths. Mortality rate (MR) in males was 53.4% and 75.8% in females among those with azotemia. MR was 18.5% in those with hypoalbuminemia and 32.7% with unconsciousness. Patients' diagnoses were: sepsis (44.4%), diabetes mellitus (23.5%), HIV (27.5%), hypertension (20.3%) and stroke (15.7%). In those with diabetes mellitus, MRs was high (58.3%) in the first 7 days, p<0.003. However, MRs in different durations of admissions did not vary significantly in those with Sepsis (p=0.062), HIV (p=0.374), HTN (p=0.880), stroke (p=0.141). There was some overlap in foci of infection. MRs varied in patients with Sepsis from different foci of infection and in different durations of admission. In diabetic ulcer patients, there was a significant difference in MRs influenced by duration of admission, with high MR of 56.3% in the first 7 days, p=0.024. MRs in other foci of infections did not vary significantly with varying durations of admission (Chest p=0.110, GIT p=0.223, Mouth p=0.409). In females with anemia, MR was high (47.8%) in the first 7 days, p=0.027. In male patients with anemia, MRs across different durations of admission did not differ significantly, p=0.568. In patients with azotemia, hypoalbuminemia, unconsciousness, there was no difference in MRs across different durations of admission. **Conclusion**: Mortality rate (20.5%) was high in this study with most (59.5%) occurring in the first week of admission, influenced by age, sepsis, azotemia, anemia, unconsciousness, and hypoalbuminemia. Common causes of death were sepsis, diabetes mellitus, HIV, hypertension, and stroke.

KEYWORDS: High mortality rate, Duration of admission, Anemia, Azotemia, Hypoalbuminemia, Sepsis, Age, Awka, Nigeria.

INTRODUCTION

Mortality reviews are a part of clinical audit of hospitals which if properly done helps in the general improvement of clinical services, personnel audit and patient's individualized management. Mortality and morbidity pattern of an environment may reflect disease burden.[1] Although teaching hospitals, as referral centers are often confronted with irredeemable, late presenting illnesses, those not referred, but who were brought by their relatives present very late because of the poor health-seeking behavior, poor socio-economic and living conditions.[1-3] The knowledge of the mortality pattern of a community also helps in health policy-making, manpower and infrastructural thrusts that can improve the general wellbeing of citizens.[4]

Hospital mortality is a neglected but rich source of information that helps in understanding disease burden, surveillance and effect of system failure[5] though previous studies showed that about 43% of mortality outcome hospital data are often missing,[6,7] hence leading to paucity of data on overall mortality of medical

patients in Sub-Saharan Africa at large, and Nigeria, in particular. A systematic review by Adebusoya et al[8] showed hospital mortality rate (MR) of about 22.6%, with a range of 6.8% - 44.7%. Overall, mortality was higher in males than females.[8]

Several factors increased mortality in medically admitted patients. These included anemia, azotemia, hypoalbuminemia, irrespective of age but for elderly patients all these factors (any detected anomaly) cause mortality in them.[8]

With paucity of data on the common causes of medical deaths in Nigeria, this study was embarked upon to evaluate the causes of mortality, average duration of hospital stay and some clinical states that night influence mortality in these patients.

METHODOLOGY

This is a retrospective study of all mortality in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH) medical wards conducted from January 2017 to December 2018.

Approval for this study was obtained from the Research Ethics Committee of the hospital, referenced COOUTH/REC/25/2018, and dated 21/03/2018.

The patients' case files were retrieved from the Records Unit. Data were obtained from the admissions and discharge registers as well as patient's case files. Only the patients' case files with complete data were selected. a Information obtained for each patient were: age, sex, diagnosis, hemoglobin (Hb), packed cell volume (PCV), serum urea (mg/dl), serum creatinine (mg/dl), serum albumin, levels of consciousness, duration of stay in hospital.

The variables were graded as follows:
Age 19 – 30 years = young adults, 31 – 60 years = middle-age, 61 – 80 years = elderly, ≥ 80 years = very elderly.

Duration of admission (days)
0 – 7 days, 8 – 14 days, 15 – 28 days, 29 – 42 days, > 42 days.

Level of consciousness
Unconscious, Conscious

Data analysis
The data were analyzed using SPSS version 20. Continuous variables were presented as means ± standard deviation (SD); qualitative variables were expressed as proportions and percentages. ANOVA was used to compare the means of variables while the associations of MR with variables were determined using student t test. All tests were 2 tailed, and $p<0.05$ was taken as statistically significant.

Definition of Terms
Azotemia = serum creatinine >1.3mg/dl in males, or >1.2mg/dl in females, or serum urea >43mg/dl
Anemia = PCV<35% in males, or <30% in females
Hypoalbuminemia = serum albumin <3g/dl
PCV (males) (%)
Low: <35, Normal: 35 – 50, High: >50
PCV (females) (%)
Low: <30, Normal: 30 – 45, High: >45
Serum urea (mg/dl)
Low: <13, Normal: 13 – 43,, High: >43
Serum creatinine (males) (mg/dl)
Low: <0.8, Normal: 0.8 – 1.3, High: >1.3
Serum creatinine (females) (mg/dl)
Low: <0.6, Normal: 0.6 – 1.2, High: >1.2
Serum albumin (g/L)
Low: <30, Normal: 30 – 50, High: >50

RESULTS

The patients' case files with incomplete data were removed from the study. The total admissions of 1,583 cases (752 males and 831 females) were recorded. Out of this number, 1,258 cases (595 males and 663 females) were discharged home while 325 (167 males and 158 females) died, indicating a MR of 20.5%. However, only the case details of 153 patients out of 325 recorded deaths who had complete data were completely analyzed.

Socio-Demographic and Clinical Indices of the Patients

Age and mortality
The mean age of the patients was 54.58 years and their age range was 19 - 99 years. Out of the 153 deaths with complete data, 90 (58.8%) were in the age group of 31-60years, 13(8.5%) in 19-30years, 36(23.8% in 61-80 years and 14(9.2%), in 80+ years. This showed that MR was high among the 31- 60 age group and declined with increasing age as well as with declining age (Table 1a).

Gender and mortality
Male patients deaths of 83(54.2%) were recorded and this was significantly higher than female deaths of 70(45.8%) (Table 1a).

Duration of admission and mortality
The duration of admission among those that died was 9.94 ± 13.20 days. However, out of the 153 deaths recorded. 91(59.5%) occurred within the first 7 days on admission and the death rate progressively declined with increasing duration of stay, with 5(2.3%) deaths after 42 days of admission (Table 1a).

Anemia and mortality
Among the 83 male patients that died, anemia (PCV<35%) was recorded in 46(64.8%) deaths, and mortality declined as the PCV increased (Table 1b). Similarly, among female deaths, the mean PCV was 27.87 ± 10.43, anemia (PCV<30%) was recorded in 23(54.8%) deaths, but also progressively declined as PCV increased (Table 1b).

Serum Urea and Mortality
Among the 153 patient deaths, 90 had complete serum urea data. The mean serum urea was 80.68 ± 70.99mg/dl. Only 2(2.2%) were found to have serum urea that was high: >43mg/dl (Table 1b).

Creatinine (males) (mg/dl)
Those with complete data on serum creatinine were 58 with a mean value of 2.43 ± 2.87mg/dl. Out of this number, 31(53.4%) were found to have serum creatinine >1.3mg/dl, representing the proportion of male patient deaths with azotemia (Table 1c).

Creatinine (females) (mg/dl)
The number of patient death with complete data on serum creatinine was 33 with a mean of 3.28 ± 4.38mg/dl. Out of this, 25(75.8%) were observed to have serum creatinine >1.2mg/dl, indicating the proportion with azotemia (Table 1c).
Overall, azotemia was observed in higher proportion of females deaths (75.8%) compared to males deaths (53.4%).

Serum Albumin
Those with complete data on serum albumin were 54 with a mean value of 37.00 ± 8.44g/dl. Out of this number, only 10(18.5%) were observed to have serum albumin value <3.0g/dl, indicating the proportion with hypoalbuminemia (Table 1c).

Unconsciousness and Mortality
Among the 153 patient deaths, 50(32.7%) were recorded to have unconsciousness, indicating the degree of severity of the cases on presentation (Table 1c).

Table 1a: Socio-Demographic and Clinical Indices of The Patients.

	FREQUENCY	PERCENT (%)
Age group (years)		
Mean ± SD	54.58 ± 17.40	
19 – 30	13	8.5
31 – 60	90	58.8
61 – 80	36	23.5
80+	14	9.2
Total	**153**	**100**
Gender:		
Males	83	54.2
Females	70	45.8
Total	**153**	**100**
No. of days on admission (days)		
Mean ± SD	**9.94 ± 13.20**	
0 – 7	**91**	**59.5**
8 – 14	**35**	**22.9**
15 – 28	**15**	**9.8**
29 – 42	**7**	**4.6**
> 42	**5**	**3.3**
Total	**153**	**100**

SD=standard deviation

Table 1b: Socio-Demographic and Clinical Indices of The Patients.

	FREQUENCY	PERCENT (%)
PCV (males) (%)		
Mean ± SD	29.66 ± 8.94	
Low: <35	46	64.8
Normal: 35 – 50	23	32.4
High: >50	2	2.8
Total:	**71**	**100**
PCV (females) (%)		
Mean ± SD	27.87 ± 10.43	
Low: <30	23	54.8
Normal: 30 – 45	17	40.5
High: >45	2	4.8
Total:	**42**	**100**
Serum Urea (mg/dl)		
Mean ± SD	**80.68 ± 70.99**	
Low: <13	**22**	**24.4**
Normal: 13 – 43	**66**	**73.3**
High: >43	**2**	**2.2**
Total:	**90**	**100**

PCV=packed cell volume SD=standard deviation

Table 1c: Socio-Demographic and Clinical Indices of The Patients.

	FREQUENCY	PERCENT (%)
Serum Creatinine (males) (mg/dl)		
Mean ± SD	2.43 ± 2.87	
Low: <0.8	9	15.5
Normal: 0.8 – 1.3	18	31.0
High: >1.3	31	53.4
Total:	**58**	**100**
Serum Creatinine (females) (mg/dl)		
Mean ± SD	3.28 ±4.38	
Low: <0.6	-	-
Normal: 0.6 – 1.2	8	24.2
High: >1.2	25	75.8
Total:	**33**	**100**
Serum Albumin (g/L)		
Mean ± SD	37.00 ± 8.44	
Low: <30	10	18.5
Normal: 30 – 50	44	81.5
High: >50	-	-
Total:	**54**	**100**
Consciousness:		
Unconscious	50	32.7
Conscious	103	67.3
Total	**153**	**100**

SD=standard deviation

Diagnoses of Patients

Sepsis was the commonest diagnosis made (44.4%), followed by Diabetes Mellitus (DM) (23.5%), Human immunodeficiency virus (HIV) infection (27.5%), Hypertension (HTN)(20.3%)and Cardiovascular accident (CVA) (regardless of the type) (15.7%). Some patients had only one clinical condition while most of them had more than one clinical co-existing conditions (Table 2).

Diagnoses and Age groups

Although there were observed differences in MRs between the various age groups and the diagnostic components, these differences were not significant as the MR was high (57.4%) in those in the age group 31-60 years (middle age) among those recorded to have Sepsis, (p=0.647). Among those recorded to have DM, the MRs in the different age groups showed a significant difference - peaked in the 31-60 years age group (47.2%), and declined with young age and increasing age, p=0.028),. A similar observation was made among those with HIV where the MR across age groups was significantly different, high in the age group 31-60 years, but declined with increasing age, p=0.001. On the contrary, though the MRs were significantly different in the different age groups, those aged 61-80 years were observed to have 50.0%, a figure that was higher than the 16.7% in >80 years and 33.3% in 31-60years, p=0.001 (Table 2).

The differences in MRs in the different age groups were not significant among those found to have Sepsis, p=0.647, and those with HTN, p=0.475 (Table 2).

Table 2: Diagnoses and Age Groups.

Diagnoses	Age Group n(%)					X^2 (df)	P – value
	Young adults	Middle Age	Elderly	Very Elderly	TOTAL		
Sepsis	4 (5.9)	39 (57.4)	18 (26.5)	7 (10.3)	68 (100)	1.66 (3)	0.647
DM	1 (2.8)	17 (47.2)	15 (41.7)	3 (8.3)	36 (100)	8.61 (3)	0.028*
RVD	3 (7.1)	35 (83.3)	3 (7.1)	1 (2.4)	42 (100)	15.93 (3)	0.001**
HTN	1 (3.2)	18 (58.1)	10 (32.3)	2 (6.5)	31 (100)	2.46 (3)	0.475
CVA	-	8 (33.3)	12 (50.0)	4 (16.7)	24 (100)	14.52 (3)	0.001**

:**p-value < 0.05; *:**p – value < 0.01. DM=diabetes mellitus. HIV=human immunodeficiency virus. HTN=hypertension. CVA=cerebrovascular accident.

Diagnoses and MR (based on number of days on admission)

Among patients documented to have DM, MRs were significantly different in varying durations of admission of the patients, and was high (58.3%) in the first 7 days, compared to other duration of admission, p<0.003. However, MRs in the different durations of admissions did not vary significantly among those found to have

Sepsis (p=0.062), HIV (p=0.374), HTN (p=0.880), CVA (p=0.141) (Tables 3).

Table 3: Diagnoses and Rate of Death (Based on Number of Days on Admission).

Diagnoses	Number of Days on Admission (days) n(%)						X^2 (df)	P - value
	0 – 7	8 – 14	15 – 28	29 – 42	> 42	Total		
Sepsis	39 (57.4)	16 (23.5)	7 (10.3)	6 (8.8)	-	68 (100)	8.66 (4)	0.062
DM	21 (58.3)	3 (8.3)	6 (16.7)	2 (5.6)	4 (11.1)	36 (100)	14.40 (4)	0.003**
HIV	22 (52.4)	12 (28.6)	6 (14.3)	2 (4.8)	-	42 (100)	4.17 (4)	0.374
HTN	21 (67.7)	5 (16.1)	3 (9.7)	1 (3.2)	1 (3.2)	31 (100)	1.40 (4)	0.880
CVA	20 (83.3)	2 (8.3)	2 (8.3)	-	-	24 (100)	6.18 (4)	0.141

****:**p – value < 0.01 DM=diabetes mellitus HIV=human immunodeficiency virus. HTN=hypertension. CVA=cerebrovascular accident

Foci of Infection for Septic patients and Rate of death (based on number of days on admission)

The common foci of infection among patients with sepsis were the chest (32.8%), gastrointestinal tract (GIT) (26.2%), urinary tract (UT) (21.3%) and gluteus (18.0%). Other foci of infection included: mouth (3.3%) and diabetic ulcers (3.3%). Also, some patients had more than one focus of infection such as seen in the table below: There was some overlap in foci of infection (Table 4).

The morality rates among the patients that had Sepsis showed varying values with different foci of infection and varying durations of admission. In those with Diabetic ulcer, there was a significant difference in MRs influenced by duration of admission. For those that died within 7 days, the observed MR of 56.3% was high, compared to 43.8% in those on admission duration of 8-14days, p=0.024. MRs in other foci of infections did not vary significantly with varying duration of admission (Chest p=0.110, GIT p=0.223, Mouth p=0.409). MRs recorded in those with UTI, Chest+, Gluteal, Chest + Mouth showed skewed spread at different durations of admission (Table 4).

Table 4: Focus of Infection for Septic Patients.

Focus of Infection	Number of Days on AdmissioN (days) n(%)						X^2 (df)	P - value
	0 – 7	8 – 14	15 – 28	29 – 42	> 42	Total		
Chest	13 (72.2)	2 (11.1)	3 (16.7)	-	-	18 (100)	6.04 (3)	0.110
Chest + Gluteus	-	-	-	1 (100)	-	1 (100)	9.32 (3)	0.025*
Chest + Mouth	-	-	-	1 (100)	-	1 (100)	9.32 (3)	0.025*
Diabetic ulcer	1 (50.0)	-	-	1 (50)	-	2 (100)	4.17 (3)	0.243
GIT	9 (56.3)	7 (43.8)	-	-	-	16 (100)	9.48 (3)	0.024*
Gluteus	2 (22.2)	3 (33.3)	2 (22.2)	2 (22.2)	-	9 (100)	4.38 (3)	0.223
Mouth	-	-	-	1 (100)	-	1 (100)	9.32 (3)	0.025*
UT	7 (58.3)	2 (16.7)	3 (25.0)	-	-	121 (100)	2.89 (3)	0.409
UT + Gluteus	-	-	1 (100)	-	-		5.87 (3)	0.118

***:**p-value < 0.05. GIT=gastrointestinal tract. UT=urinary tract.

Clinical indices of the patients and Rate of death (based on number of days on admission)

Anemia (PCV) was significantly noted among the dead female patients.

There was variability in MRs observed in female patients who had anemia with different durations of admission. MR of 47.8% in the first 7 days of admission was significantly high compared to the values found in patients with other durations of admission, p=0.027. In contrast, among recorded deaths in male patients with anemia, there was no significant difference in MRs observed across different durations of admission p=0.568 (Table 5).

The patients with azotemia, hypoalbuminemia, unconsciousness, did not show any significant difference in MRs across different durations of admission (Table 5).

Table 5a: Clinical indices of the patients and Rate of death (based on number of days on admission)

CLINICAL INDEX	NUMBER OF DAYS ON ADMISSION (days) n(%)						X^2 (df)	P - value
	0 – 7	8 – 14	15 – 28	29 – 42	> 42	Total		
PCV (males) (%)								
Low: <35	21 (45.7)	12 (26.1)	5 (10.9)	5 (10.9)	3 (6.5)	71 (100)		
Normal: 35 – 50	11 (47.8)	10 (43.5)	2 (8.7)	-	-	23 (100)	7.21 (8)	0.568
High: >50	1 (50.0)	1 (50.0)	-	-	-	2 (100)		
PCV (females) (%)								
Low: <30	11 (47.8)	4 (17.4)	7 (30.4)	-	1 (4.3)	23 (100)		
Normal: 30 – 45	12 (70.6)	4 (23.5)	-	1 (5.9)	-	17 (100)	14.64 (8)	0.027*
High: >45	1 (50.0)	-	-	-	1 (50.0)	2 (100)		
Urea (mg/dl)								
Low: <13	-	1 (50.0)	1 (50.0)	-	-	2 (100)		
Normal: 13 – 43	7 (31.8)	9 (40.9)	3 (13.6)	2 (9.1)	1 (4.5)	22 (100)	8.52 (8)	0.358
High: >43	34 (51.5)	17 (25.8)	8 (12.1)	3 (4.5)	4 (6.1)	66 (100)		

***:**p-value < 0.05. PCV=packed cell volume. Urea=serum urea.

Table 5b: Clinical Indices of The Patients And Rate of Death (Based on Number Of Days on Admission).

Clinical Index	NUMBER OF DAYS ON ADMISSION (days) n(%)						X^2 (df)	P - value
	0 – 7	8 – 14	15 – 28	29 – 42	> 42	Total		
Creatinine (males) (mg/dl)								
Low: <0.8	2 (22.2)				-			
Normal: 0.8 – 1.3	8 (44.4)	4 (44.4)		2	-	9 (100)	8.04	
High: >1.3	16 (51.6)	7 (38.9)	1 (11.1)	(22.2)	3 (9.7)	18 (100)	(8)	
Creatinine (females) (mg/dl)	-	7 (22.6)	2 (11.1)	1 (5.6)		31 (100)		0.369
Low: <0.6	3 (37.5)		4 (12.9)	1 (3.2)				
Normal: 0.6 – 1.2	12 (48.0)	-			-			
High: >1.2		3 (37.5)	-	-	1 (12.5)	-	2.35	
Albumin (g/L)		6 (24.0)	1 (12.5)	-	1 (12.5)	8 (100)	(4)	
Low: <30	4 (40.0)		5 (20.0)	1 (4.0)	1 (4.0)	25 (100)		0.731
Normal: 30 – 50	18 (40.9)	4 (40.0)						
High: >50	-	14 (31.8)	-	1 (10.0)	1 (10.0)	10 (100)		
Consciousness:		-	6 (13.6)	3 (6.8)	3 (6.8)	44 (100)	2.06	
Unconscious	37 (74.0)	9 (18.0)	3 (6.0)	-	-	-	(4)	0.802
Conscious	54 (52.4)	26 (25.2)	12(11.7)	1 (2.0)		50 (100)		
				6 (5.8)	-	103(100)		0.113
					5 (4.9)		7.10 (4)	

***:**p-value < 0.05. creatinine=serum creatinine. Albumin=serum albumin.

DISCUSSION

The overall mortality rate from our study was 20.5% with male:female ratio of 1.1:1. The overall mean age was 54.58 ± 17.4 which is closely related to the average life expectancy in Nigeria.[12] This study finding is similar to that done by Arodiwe et al[13] in UNTH, the same south east which had mortality of 22.8% and male:female 1.7:1 but contrasts with that by Garko et al[14] in Kano University Teaching Hospital and Saidu Hadiza[15] in a specialist hospital in Kano who recorded a mortality rate of 11.2% and 28.3% respectively. Duration of review and sample size may have affected the result. Olarinde OJ et al[6] from their study in Ada-Ekiti had same male:female ratio but lower mortality rate of 12.3% with the highest deaths recorded in the elderly population. The location and population size might have contributed to this disparity.

Majority of the deaths occurred in individuals below 60yrs of age, this is the most active age group, the working class. This is similar to most studies conducted in Africa most especially the Sub-Saharan Africa[16-20] where life expectancy is generally short with poor infection control and rising incidence of non-communicable diseases. Majority of deaths occurred in the first week of admission, and even those with incomplete data died within the first 48hrs of admission. This reflects the level of poverty and poor health seeking habits of people from this part of the world.

Across all age groups diabetes, HIV/AIDS and Cerebrovascular accidents were the common causes of death. This agrees partly with the study by Saidu H[15] in Kano where cerebrovascular diseases ranked the most common cause of death. Our finding however contrasts with those of Arodiwe et al[13] in UNTH, Enugu, where chronic kidney disease is the single most common cause

of mortality. We did not record any case of chronic kidney disease among the mortality. This might be explained by fact that the study center has no dialysis machines and capacity for renal replacement therapy. Hence such patients are transferred out to other centers where such services are available. Generally, all the studies have shown a marked increase in non-communicable diseases being the most common cause of mortality in this part of the world.

Mortality was significantly very high among the diabetics in the first week of admission. Diabetic patients remain at higher risk of death due to increased risk of infections/sepsis secondary to depressed immunity, and metabolic imbalances; hence majority of them present late with overwhelming infections, and complication both acute and chronic complication thereby high morbidity and mortality.

Sepsis was a common cause of death from this study, with chest and GIT being the common sites with significant mortality. Chest infections otherwise known as pneumonia in severe cases has high morbidity and mortality because of its associated risk of respiratory and cardiovascular failure hence the need for aggressive management with appropriate anti-microbial agents early in the illness.[21] This is similar with the study by Niv.Y et al[5] were the most frequent cause of death included sepsis with focus on the chest.

Anemia as accessed by low packed cell volume (PCV) especially among the females was significantly associated with high mortality, hence the need for blood transfusion services in our hospitals as the help in reducing mortality in admitted medical patients.

CONCLUSION

Mortality rate was high in this study with most occurring in the first week of admission, influenced by age, sepsis, azotemia, anemia, unconsciousness, and hypoalbuminemia. Common causes of death were sepsis, diabetes mellitus, HIV, hypertension, and stroke. Improved management of infections, anemia, acute kidney injury and prompt referral of cases from peripheral hospitals may stem down high mortality rate in this setting.

LIMITATION

The diagnoses were all made clinically, no post mortem /autopsy examination so as to have definitive diagnosis; this was because of cultural background and difficulty getting the relatives to give consent.

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