

Intensive Care Unit Admissions in Federal Medical Centre Umuahia South East Nigeria

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ABSTRACT:

BACKGROUND: The Federal Medical Centre Umuahia(FMCU) is a tertiary referral centre in Abia state, southeast Nigeria serving a catchment area made of Abia state and environs. An intensive care unit(ICU) was established in the hospital in December 2009 to improve healthcare delivery to critically ill patients.

OBJECTIVE: To determine the admission patterns and report the initial experience in the intensive care of patients in the FMCU.

METHODS: This is a retrospective study of the patients admitted into the ICU of FMCU from December 2009 to March 2011. Data retrieved from the patients ICU records included demographics, indication for admission, length of stay in ICU, and outcome of stay. The cost of ICU care was extracted from the financial records of the patient following discharge or demise. Data acquisition and analysis was performed using the statistical package for social sciences(SPSS) version 15.

RESULTS: A total of 87 patients were studied consisting of 59 males and 28 females. The ages ranged from 2 days to 87 years with a mean age of 41 ± 2.34 years. There were 11 patients within the pediatric age range (12.6%). Post-operative surgical patients (51) accounted for the majority of the admissions (58.6%). There were also 21 non-operated trauma cases (24.1%), 7 medical cases (8.1%), 8 obstetrics and gynecological cases (9.2%). Post-operative admissions were mainly emergencies – 39 cases (76.5%) cases while 12 (23.5%) were elective. Most post-operative ICU admissions followed abdominal surgery – 31 cases (58.8%) while neurological trauma accounted for most non-operated trauma 17 cases (81%). The cost of stay per patient ranged from N2745.65 to N238123.4 (\$82.23 to \$1536.28) with an average cost per day of N19506.75 (\$125.85). The cost per day for mortality cases was N28598.74 (\$184.51). The modal length of ICU stay was 2 days with a mean of 3.63 ± 0.34 days and a range of one to sixteen days. About 68.4% of the patients spent = 3 days (38.3% of total ICU days), while 31.6% spent > 3 days (61.7% of total ICU days). Of the 87 patients, 57 (65.5%) were discharged from ICU to the wards, 28 (32.2%) died in ICU while 2 (2.3%) were referred to bigger centers. Twelve mortalities (42.8%) were among the emergency postoperative patients and 10 (35.8%) non-operated trauma patients (80% of which are neurological trauma).

CONCLUSION: From our study, most ICU admissions come from the operating theatre. The mortality is high

and is comparable to other studies in Africa. The cost of stay is very high when compared with annual per capita income in Nigeria of \$1190.

KEY WORDS: Intensive care unit, admissions, outcome.

Date Accepted for Publication: 27 October, 2011

NigerJMed 2012: 70-73

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INTRODUCTION:

The FMC Umuahia is a 240-bed hospital offering multidisciplinary tertiary care serving Abia state and other adjoining states. It has a 4-bed ICU equipped with facilities for ventilatory care and monitoring of hemodynamic and metabolic profiles. The staff includes 2 consultant anesthesiologists, senior and junior residents, trained ICU nurses and other ancillary staff. It offers 24-hour service. The patients are mainly the critically ill requiring intensive monitoring; their admission into and discharge from ICU being decided by the consultant anesthesiologist. This initial report on the experience garnered in running a new ICU will form the yardstick for evaluating future performance and assessing the effect of various policy changes on the system.

Following the establishment of the first ICU in 1953 in Copenhagen¹, there has been significant improvement in both human resources and infrastructure used in supporting the critical patients in ICU with attendant increased survival in most developed countries. The ICUs' in the developing countries, where available, are still poorly equipped and under-staffed with attendant high mortalities. Most new ICUs' in Sub-Saharan Africa are multipurpose, admitting all age groups and wide range of pathologies and diagnoses. Sub-specialized ICUs, like surgical, neurosurgical, cardiac, medical, trauma, pediatric and neonatal ICUs are encouraged for sub-specialization and improved outcome. Most ICU patients come from the operating theatre, hence siting of ICUs in close proximity to the theatre. The cost of ICU care is high in our environment especially when compared with the per capita income in Nigeria of \$1190.²

OBJECTIVE

To determine the admission patterns and report the initial experience in the intensive care of patients in the FMCU.

METHODS

This a retrospective study of the patients admitted into the ICU of FMCU from December 2009 to March 2011. Data was retrieved from the patients ICU records which included demographics, indications for admission, length of stay in ICU ,outcome of ICU stay and cost of stay. The costing of ICU stay was done by hospital finance department and varies depending on consumables and facilities used. Data acquisition and analysis was performed using the statistical package for social sciences(SPSS) version 15.

RESULTS

Eighty-seven patients admitted into the intensive care unit of FMCU between December 2009 to March 2011 were studied retrospectively. There were fifty nine males and twenty-eight females with a male to female ratio of 2.1:1. The ages of the patients ranged from two months to eighty seven years (Table 1), with a mean age of 41 ± 2.34 years. There were eleven(11) patients within the pediatric age group(12.64% of all admissions). There were fifty-one(51) postoperative surgical patients which represented 58.6% of the study population and twenty-one (21) non-operated trauma cases representing (24.1%), seven patients with medical emergencies(8.1%), and eight cases of obstetrics and gynecological emergencies(9.2%). About 76.5% of the postoperative cases(39 patients) were emergencies while 23.5% (12 patients) were elective cases. Abdominal surgical procedures constituted 58.8%(30 out of 50) of all the postoperative cases while neurological trauma made up 81%(17 out of 21) of non-operated trauma cases.

The cost of stay per patient ranged from ₦12745.65 to ₦238123.4 (\$82.23 to \$1536.28) with an average cost per day of ₦19506.75 (\$125.85) and ₦28598.74(\$184.51) per day for mortality cases. The modal length of ICU stay was two (2)days with a mean of 3.63 ± 0.34 days and a range of one to sixteen days. The mean ICU stay for mortality cases is 2.74 days. About 68.4% of the patients spent =3days(38.3% of total ICU days), while 31.6% spent >3days(61.7% of total ICU days). ICU mortality in those who spent >3days was 16%. Of the 87 patients, 57 (65.5%) were discharged to the wards within the FMCU, 28 patients (32.2%) died, while 2(2.3%) were referred to other hospitals. Among the cases with mortality outcome, 42.8% were emergency postoperative patients. Patients that had emergency laparotomy accounted for 91.7% of all mortalities within the emergency post-operative subgroup. Of the total cases of mortality, 35.8% occurred among non-operated trauma patients. Of this group(non-operated trauma), 80% had neurological trauma). Of the total number of mortality , 7.2% occurred within the paediatric age group, while 75% occurred in males.

Table 1: Age Distribution of Patients

Age (yrs)	Frequency	% frequency
0-10	7	8.10
11-20	9	10.34
21-30	15	17.20
31-40	16	18.39
41-50	9	10.34
51-60	14	16.09
61-70	9	10.34
>70	8	9.20
Total	87	100

Table 2: Indications for Admission

INDICATION FOR ADMISSION	FREQUENCY	%FREQUENCY
POST-OPERATIVE SURGICAL PATIENTS		
EMERGENCY	39	44.80
ELECTIVE	12	13.80
NON-OPERATED TRAUMA PATIENTS	21	24.10
MEDICAL PATIENTS	7	8.10
OBSTETRICS AND GYNAECOLOGY PATIENTS	8	9.20
TOTAL	87	100

TABLE 3: Distribution of Mortality

INDICATION FOR ADMISSION	FREQUENCY	%FREQUENCY
POST-OPERATIVE SURGICAL PATIENTS		
EMERGENCY	12	42.80
ELECTIVE	0	0.00
NON-OPERATED TRAUMA PATIENTS	10	35.80
MEDICAL PATIENTS	3	10.7
OBSTETRICS AND GYNAECOLOGY PATIENTS	3	10.7
TOTAL	28	100

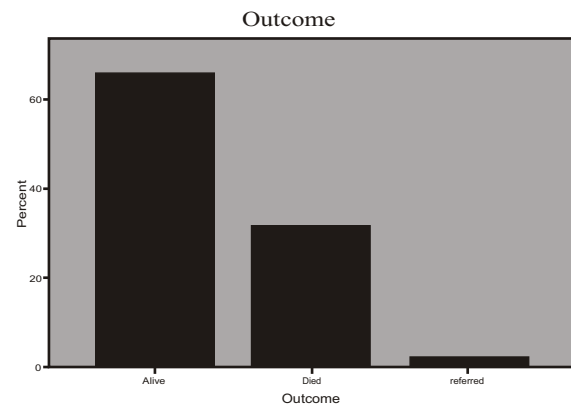


Figure 1: Bar Chart Representing Outcome of Admitted Patients

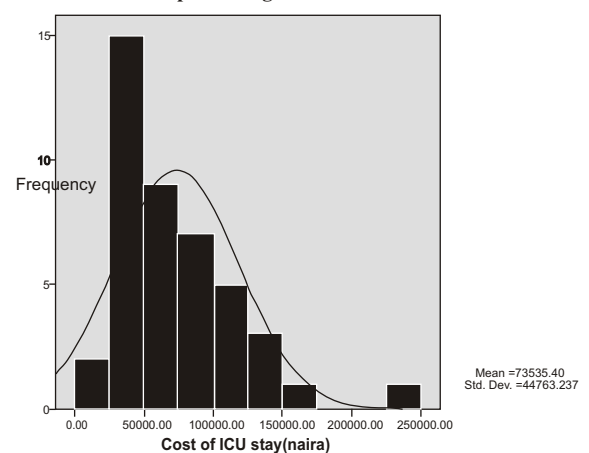


Figure 2: Histogram showing cost of ICU Stay

DISCUSSION

The age range of our patients shows that all age groups requiring intensive care were admitted corroborating other African studies³. 12.4% of all admissions were children aged 18 years and below and contributed 2.2% of the mortality. The percentage of the elderly above 65 years of 16.1% is significantly lower than the 57% recorded in a Chilean University Hospital study⁴.

Similar to ours is a Tunisian ICU study which showed a significantly younger population than adults⁵. This may be related to the predominantly young population seen in most developing countries due to the shorter life expectancy. Furthermore, the wide variety of cases managed is comparable to other studies, though there were no burns nor tetanus cases as reported by Isamade³ and Oke⁶ respectively. The male to female ratio of 2.1:1 is higher than in studies from northeastern⁷ and northcentral³ regions of Nigeria as well as Zimbabwe⁸.

Most of the admissions were within the active age group constituting a large percentage of the nation's workforce. The commonest indications for admission were postoperative surgical patients as also documented by Isamade et al³; the most frequently performed surgery in the ICU-admitted cases being emergency laparotomy for peritonitis. Improved preoperative resuscitation and intra-operative care will help reduce this. Non-operated trauma cases, which are mainly neurological trauma, constitute the second most common indication for ICU admission. The mean length of ICU admission of 3.63±0.34 days is comparable to 4.5 days³ and 4.8 days⁹ in other studies. Length of stay is shorter in non-survivors and this may be related to increased severity of disease process leading to earlier death.

The majority of patients (68.4%) spent =3 days in ICU constituting 38.8% of the total ICU days which compares with another study on ICU days in Thailand¹⁰. This is because majority of the patients are postoperative surgical patients whose hemodynamic and cardio-respiratory status stabilize in the early period after surgery. Mean cost of ICU stay is high in this study relative to the per capita income in Nigeria². It is however lower in some other reports from Dublin¹¹ and Germany¹².

The mean cost of ICU stay and the average cost per day are higher in non-survivors than survivors and this may be due to the use of more drugs and hospital consumables in non-survivors¹¹. The financial burden of the care is borne mostly by patient and relatives since most patients in Nigeria are not covered by the National Health Insurance Scheme. The absence of the less expensive High Dependency Unit warrants that patients stay in the more expensive ICU till they are stable enough to be moved to the general wards. In this present

study, the overall mortality of 32.2% is higher than 12.1% in Germany¹², 22.5% in Tunisia⁵ and 17.2% in France⁵ but lower than 35.1% in Gombe⁷, Nigeria and 48.2% in Jos³, Nigeria. Emergency postoperative patients constituted the highest proportion of non-survivors. This is also corroborated by a Zimbabwean Paediatric ICU study⁸.

CONCLUSION

Our study shows a high ICU mortality though the results are comparable with other studies from developing countries with similar demographic and economic profiles. With a high cost of ICU care vis-à-vis a low per capita income in Nigeria, a functional comprehensive health insurance covering intensive care will together with manpower training in intensive care and upgrading of facilities, help in improving outcome.

LIMITATIONS OF STUDY

This is a pilot study highlighting our initial experience. We intend to do a follow-up study in the future with a larger sample size for further evaluation and outcome comparison among our ICU patient subgroups.

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