



Audit of General Intensive Care Unit of Sir Salimullah Medical College, Mitford, Dhaka

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Abstract: Background: Intensive care units provide care to patients with severe or life-threatening illnesses and injuries, which require constant support, close supervision from life support equipment and medication in order to ensure normal bodily functions. It is staffed by highly trained physicians, nurses and respiratory therapists who specialize in caring for critically ill patients. ICUs are also different from general hospital wards by a higher staff-to-patient ratio and access to advanced medical resources and equipment that is not routinely available somewhere else. Common conditions include acute respiratory distress syndrome, septic shock, and other life-threatening conditions that are treated within ICUs. **Aim of the study:** The aim of the study was to assess the operational power, existing facilities, bed requirement, patients source and follow up and to determine and analyze the mortality in the ICU of this institution. **Methods:** It was a retrospective study conducted in the General Intensive Care Unit of Sir Salimullah Medical College and Mitford Hospital, Dhaka, Bangladesh from January 2019 to December 2019. A total of 607 patients who had been taken admission in General ICU unit of the hospital was recruited as study population. According to the criteria of analysis already informed, data were collected from admission register and mortality record books. We divided the total number of patients into 4 age groups, 10-30 years, 31-45 years, 46-65 years and above 65 years. We calculated patients' mortality and male female ratio. We also considered patients coming from different specialties those who were referred to the ICU. We observed the relationship of mortality with number of organ failure too. We categorized the patients as single, double or more organs involvement and its relationship with mortality. Duration of stay in the ICU was defined as the number of days between the admission in ICU and discharge with a minimum stay of one day and also more. Relationship with mortality and number of staying days was noticed. All data were collected within data collection sheets. **Result:** Hospital ICU mortality in an average was 45%. Patients with long ICU stay have higher mortality than shorter stay. Nonsurvivors were older than survivors. Patients from outside

have a higher mortality (85%) than those from ward, postoperative and emergency (35%). 25% of patients were in the intensive care unit for more than 3 days and shared 80% of bed occupancy. Much mortality was due to inappropriate early discharge, lack of meticulous attention before admission and inadequate care after discharge. **Conclusion:** So strengthening of facilities may be provided by appropriate transport system and acute medicine service at emergency and also by step down units or high dependency unit in ICU surroundings. Resources and study should be directed towards the low probable mortalities to improve the ICU outcome and to decrease the mortality percentage. Continuous advice and follow up should be provided to the patients after transferring to the ward, cabin or home.

Keywords: Operational power, Existing facilities, Patients source, follow up, ICU stay, Higher mortality.

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INTRODUCTION

Illness severity on admission to the intensive care unit is greater in most of the units. There was a considerable variability between units in the numbers of admission, sources of admission, case mix, severity of illness, complexity of care required and resources utilized. Intensive care units are busy and mean bed occupancy rate is very high, when standard recommendations are for occupancy rates of 70% to 80% [1]. Total number of ICU beds in Bangladesh is about 300 for 170 million people. Therefore, admission to the intensive care should be restricted, so that patients are likely to benefit from ICU care [2]. The outcome in critically ill patients concerned with prognosis has many background effects of risk factors such as age, gender, severity of illness, co morbidities, diagnosis and response to therapy. An aging population and chronic diseases may also result in an increased number of deaths in the intensive care unit patients [3-5]. The purpose of the intensive care unit is to reduce avoidable mortality and morbidity in patients who are critically ill, but how difficult to discover [2]. Unfortunately our postoperative care is based on isolation of patients only and minimal facilities are available. Therefore, surgical team and patients' party prefer to shift these patients to the intensive care unit [6]. Because judicious use of drugs, bloods and fluids, restoration of cardiac output and blood pressure, control of temperature, provision of appropriate nutrition, analgesia and respiratory support are only available in the intensive care unit. In UK recommendation 1% to 2% of acute hospital beds [8]. The working practices and outcomes from the intensive care units are poorly documented in our country. The high cost of critical care medicine has led to economic constraints being applied by government and third party payers [7]. Escalating costs and limitations on health care budgets have prompted recent interests in medical audit. Medical

audit has been defined as the systemic, critical analysis of the quality of medical care including the procedures used for diagnosis and treatment, the use of resources and the resulting outcome and quality of life for the patients [9, 10]. From different disciplines of Sir Salimullah Medical College, the patients were admitted in the intensive care unit. Patients are also referred from other hospitals and clinics. A prospective analysis of patients admitted to general intensive care unit of this hospital was conducted between January to December 2019. The audit was instituted to investigate retrospective review of stored data from archive. Demographic detail, referral source, admission time, admission diagnosis and outcome were recorded to produce for further development of services of intensive care unit.

AIM OF THE STUDY

The aim of the study was to assess the operational power, existing facilities, bed requirement, patients source and follow up and to determine and analyze the mortality in the ICU of this institution.

METHODOLOGY

It was a retrospective study. A total of 607 patients had been recruited as study population. The study was conducted from the period of January 2019 to December 2019. In this study we included all the recruited patients whom admitted to General Intensive Care Unit of Sir Salimullah Medical College and Mitford Hospital. Ethical clearance was taken from the departmental ethical clearance committee of Sir Salimullah Medical College. Data were collected from admission register and mortality record books. Patients' admission files were also studied. We divided the total number of patients into 4 age groups, 10-30 years, 31-45 years, 46-65 years and above 65 years. Relationship with mortality and

number of staying days was noticed. All data were collected within data collection sheets. We calculated patients' mortality and male female ratio. Duration of stay in the ICU was defined as the number of days between the admission in ICU and discharge with a minimum stay of one day and also more. We also considered patients sources of coming from different specialties those who were

referred to the ICU. We observed the mortality status with number of organ failure. We categorized the patients as single, double or more organs involvement and its relationship with mortality.

RESULTS

Table 1: Distribution of age and sex with their outcome of ICU admitted patients of SSMCH (N=607)

Parameters	Frequency (n)	Percentage (%)
Age in years		
10-30 yrs.	142	23.39
31-45 yrs.	107	17.63
46-65 yrs.	238	39.21
>65 yrs.	120	19.77
Gender		
Male	457	75.29%
Female	150	24.71%
Male-Female Ratio	3:1	

About 607 patients were recorded with available information in ICU. All were divided into four groups. Among them the first age group (10-30 years) obtained 142 patients, second age group (31-45 years) contained 107 patients, third age group

(46-65 years) 238 patients and fourth age group (>65 years) 120 patients. Male patients were 457 and female were 150. The male-female ratio was 3:1.

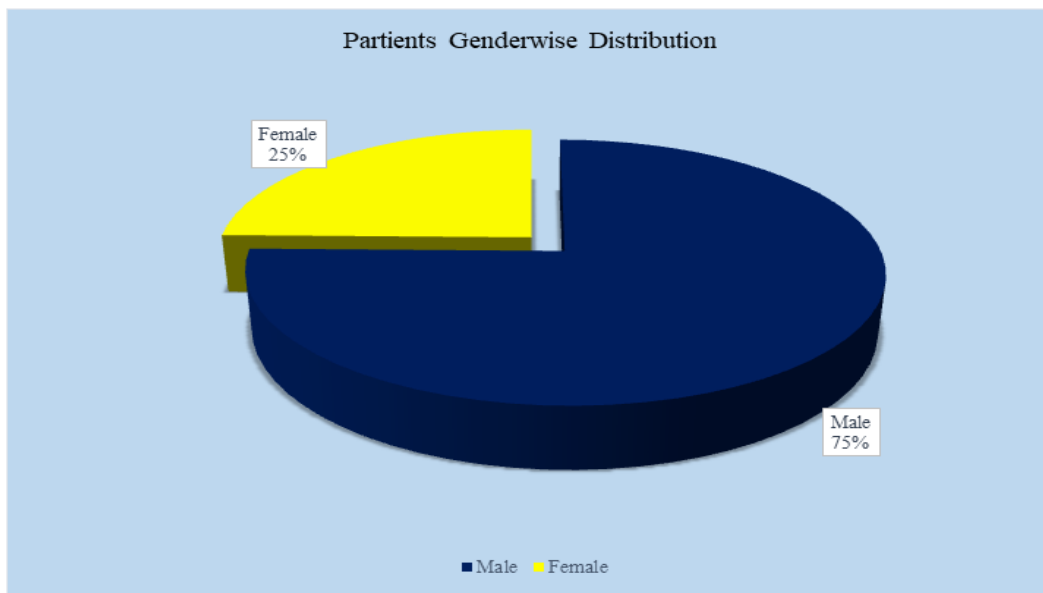


Figure I: Patients Gender Wise Distribution (N=607)

Table 2: Patients source and outcomes in ICU of SSMCH (N=607)

Source of admissions	Number of Patients admitted n(%)	Number of patients died n(%)
From ward	487(80.26)	177(70.24)
From OT/Postoperative room	38(6.19)	5(1.98)
From outside of SSMC	82(13.55)	70(27.78)

Table 2 showed, the overall mortality rate was 41.52%(252). Mortality varied significantly by age, hospital stay organ failure and source of the patients. In younger age group (First group) out of total 142 patients only 39 patients died. In second age group out of total 107 patients 47 died. In

second age group out of 238 patients 125 died and in fourth age group out of 120 patients 48 patients died. So percentage of mortality increases with increasing age up to 65 years, then it declined. So according to percentage of death, last two age groups were very much vulnerable to death.

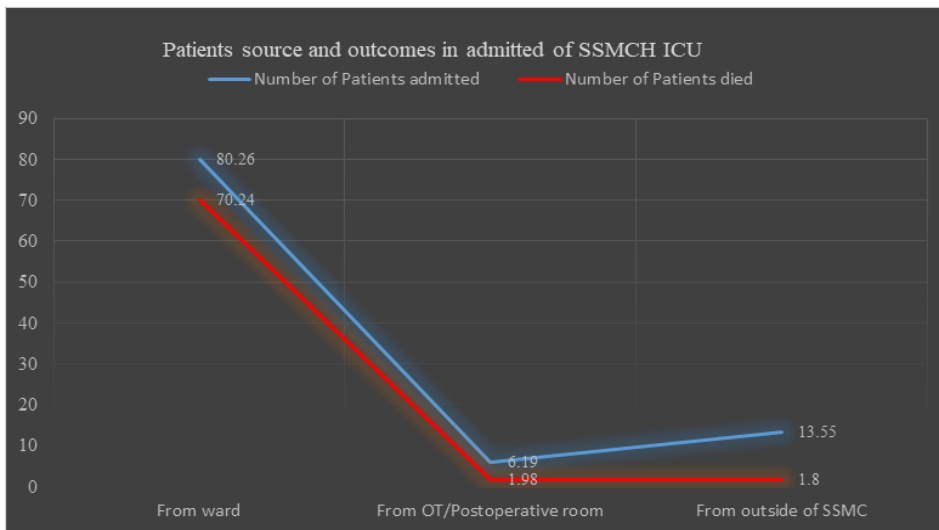


Figure II: Patients source and outcomes in admitted of SSMCH ICU (N=607)

Table 3: Patients stay in ICU

Duration	Number of Patients admitted n(%)	Number of died n(%)	p-value
Up to 7 days	562(92.6)	192(32.0)	0.001 ^s
8-14 days	37(6.17)	21(3.5)	
>14 days	8(1.30)	7(1.20)	

We also calculated the duration of staying in ICU. Most of the patients 92.6% (562) stayed in ICU for 0-7 days, 6.17% (37) patients stayed for 8-14 days, 0.75% (5) patients stayed for 15-21 days and only 0.25% (3) patients stayed for >21 days. There was highly significant difference (p<0.001) in the

distribution of ICU stay between survivors and non survivors. In non survivors, 35.32% was in the ICU for ≤ 1day, 25% of death was within 72 hours and 25 % of death was within 7days. Only 12.30 % of non survivors were within the ICU for >14 days.

Table 4: Department wise patients transfer to ICU (N=607)

Department	Number of Patients admitted n(%)	Number of died n(%)
Medicine	270(44.48%)	130(21.42%)
General Surgery	101(16.64%)	41(6.75%)
Gyane & Obs	68(11.20%)	14(2.31%)
Neuro Medicine	33(5.44%)	11(1.81%)
Neurosurgery	29(4.78%)	14(2.31%)
Nephrology	18(2.97%)	1(0.16%)
Pediatric Medicine	18(2.97%)	6(0.99%)
Others department	70(11.53%)	35(5.77%)

We also noticed that most of the patients 44.48%(270) came from internal medicine department. Minimum four patients came from hepatology department with hepatic coma. With

single organ failure 446 patients were admitted in ICU. Out of them 125 died and 321 survived. 161 patients were admitted in ICU with multi organ

failure. Out of these 127 patients died and 43 patients survived.

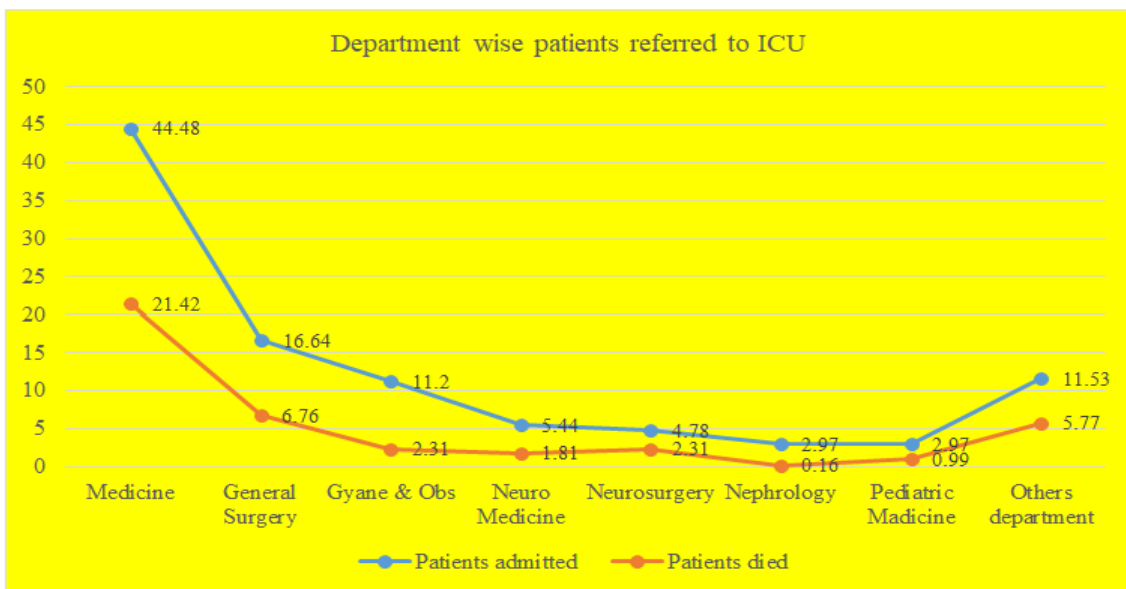


Figure III: Department wise Patients referred to SSMCH ICU (N=607)

Table 5: Organ wise ICU admitted Patients Outcomes (N=607)

Department	Number of Patients admitted n(%)	Number of died n(%)	p-Value
Single organ	446(73.48%)	125(28.03%)	<0.001
Multi organ	161(26.52%)	127(78.88%)	

Table 5 showed that, outcomes of patients in ICU most of the patients 73.48%(446) referred with single organ issue, but the casualty was

comparatively higher 78.88% (127) than single organ patients.



Figure IV: A unique ICU Unite

DISCUSSION

As rapidly as intensive care, few areas of clinical medicine are changing. Greater understanding of the pathophysiology of disease

processes, technical innovation, targeted pharmaceutical and nutritional interventions and the use of specialized audit and scoring methods to improve patient’s classification and monitoring of

disease progression have all contributed to change in the practice in the past decade [11]. The audit was in the aspect of status of critical care facilities in SSMCH and obviously to find out diverting areas requiring improvement. The ICU provides mixed services managing medical, surgical, gynaecological and obstetrics, neurosurgery and hepatobiliary patients. Immediate availability of hematological, biochemical, blood-gas analysis is needed. Portable chest radiograph is also important as it affects decision making in critically ill patients. This leads to therapeutic changes in 66% of intubated patients and 23% of non-intubated patients. This ICU is an open unit where primary doctors choose to admit patients and generally makes decisions leaving the responsibilities of managing machines and doing procedures to some extent to the intensivists [12-17]. There is an increasing appreciation of the need to prevent critical illness with proactive care rather than to offer reactive support once organ failure is established. This has considerable resource implication although savings should be made through reduced requirement for intensive care. Emphasis is placed on identifying patients at risk, with early recognition of physiological disturbances and prompt correction to avoid subsequent major complications. Our study was based on the total number of patients admitted in ICU for the period of one year (2019). All data were collected for intensive care purpose. The method of data collection and data validation is designed to minimize error.¹¹ Anyway the data were likely to be most accurate for audit information.

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