

Profile Criteria and Clinical Outcomes of Critically Ill Patients Admitted to General Intensive Care Unit at Assiut University Hospital.

Sanaa Saber Mohamed¹, Warda Youssef Mohammed², Alaa Mohamed Ahmed³ & Magedda Mohamed Mehany⁴.

1- Critical Care Nursing Department, Faculty of Nursing, Sohage University, Egypt.

2- Professor of Critical Care & Emergency Nursing, Faculty of Nursing, Cairo University, Egypt.

3- Professor in Anesthesia & ICU Department, Faculty of Medicine, Assiut University, Egypt

4- Assist Professor of Critical Care Nursing Department, Faculty of Nursing, Assiut University, Egypt.

Abstract

Health outcomes are the main measure of critical care practice. Mortality during ICU stay has been most frequently used effects in clinical practice. **So this study aims** to assess profile criteria for patient admitted to general intensive care unit and to describe their outcomes. **A descriptive research design** was once used. **Setting:** study was carried out at General Intensive Care Unit at Assiut University Hospital, **A convenience sample** of all adult critically ill patients over a period of 12 months. **Two main tools used, tool I:** patient profile characteristic's sheet, **Tool II:** clinical outcomes assessment tool: **Main results:** of 302 patients were admitted to General ICU, there were 55.6% males and 44.4% females. Age group from 50- 65 years account for 52.3% of total admission, the study showed that trauma cases account for 21.9% of all admission and it was the same as respiratory cause while the lowest was from Gynecological & obstetric, drowning and Hematological Disease 0.7%. Mortality rate was 52.3%. **Conclusion:** Majority of the studied patients at general intensive care unit were at a high risk of mortality with total mortality rate of 52.3 % more than half of death patients were aged from 50 -65 years and males. **Recommendations:** - Future identical studies should be carried to disclose standards for intensive care admissions

Keywords: *Clinical Outcomes, Profile & Critically ill Patients.*

Introduction

Background: Critically ill patient are those at high rate for actual or potential life threatening health problems. Care for patients with serious illnesses can occur in a different number of locations in hospitals (Elliott, et al., 2012). Critical illness is any pathological process causing physiological instability leading to disability or death within minutes or hours. There are many reasons for this including a lack of a systematic approach to these patients (Jane Williams, et al., 2013). Many Critically ill patients require a prolonged stay in an intensive care unit (ICU) before they recover from their critical illness, which is associated with significant mortality and resource utilization (Williams, et al., 2010).

Intensive Care Unit help to monitor and care of patients with potentially severe physiologic instability requiring technical and/or artificial life support. The level of care in an ICU is greater than that available on the floor or Intermediate Care Unit (American College of Critical Care Medicine, 2005). ICU is a place in which patients are hospitalized with an urgent need to receive medical and nursing services in the first place, and benefit from it when admitted in the second, and undergo serious

problems such as organ defects, increased hospital stay, increased costs and mortality in cases of untimely services (Van Houdenhoven, 2007). Studies have shown that some patients in critical care units do not require special care and are mostly in need of continuous monitoring of vital signs or nursing care more than those of the general sector (Asadzandi, 2012).

Intensive care is appropriate for patients requiring or likely to require advanced respiratory support, patients requiring support of two or more organ systems, and patients with chronic impairment of one or more organ system who also require support for an acute reversible failure of another organ. Early referral is particularly important, if a referral is delayed until the patient's life is clearly at risk, the chances of full recovery are difficult. Intensive care units and multi-disciplinary team management have evolved improving the survival of critically ill patients (Smith & Nielsen, 2002).

Patients with life-threatening illness are managed in critical care units with specialized monitoring and staffing requirements. The care of critically ill patients remains challenging because of patient acuity, competing time demands of other seriously ill patients, in addition to large amounts of clinical,

mechanical ventilation, and laboratory information. In such an environment, it can be difficult to consistently provide desired care to each patient. Studies of patients with specific conditions, such as sepsis and the acute respiratory distress syndrome (ARDS), suggest that many patients do not receive desired care (Sevransky et al., 2015).

Outcomes refer to the result of a process or an event; clinical outcomes refer to the results of any health care intervention, including the entire range of activities performed in an intensive care unit (ICU). Hospital mortality has been the most frequently used outcomes in clinical practice, but more and more often patients, families, health workers, policy makers and all of society, value the quality of life after discharge. Clinical outcomes are crucially important to patients and individuals working both in and outside critical care (Hinds & Watson, 2008).

The outcome in critically ill patients concerned with prognosis has many background effects of risk factors such as age, gender, severity of illness, comorbidities, diagnosis, and response to therapy. An aging population and chronic diseases may also result in an increased number of deaths in intensive care unit (ICU) patients (Wunsch, et al., 2004) Clinical results have increased the need for outcome examination and guidance on effective use. For this reason, there is an increasing demand for critical care in the population at risk (Kaymak, et al., 2016).

Outcomes assessment in critically ill patients is imperative for determining when hospital discharge can take place, for predicting mortality, and for appropriate resource administration by hospital providers. For these purposes, many different scoring systems have been described, but the neurological assessment or coma scales has been accepted as the most practical outcome indicator for neurological and neurosurgical patients (Phuping, et al., 2011).

Measuring clinical outcomes play a pivotal role in influencing the way critical care is practiced. Advances in both basic science and clinical research are more systematically applied as improvement in clinical outcomes that used to drive changes in interventions or treatments. Ultimately, as resources become scarcer in relation to the number of individuals requiring healthcare, clinical outcomes will be used to allocate funding and to demonstrate efficiency. Clinical outcomes are the result of any therapeutic interventions applied to patients. Clinical outcomes will determine the way all

aspects of critical care are delivered (Maurizia & Rui, 2010).

Outcomes evaluation after critical illness has been a rapidly growing area for research. Society used to place an emphasis on objective indices such as whether the patient was able to go back to work, but recently the emphasis has moved towards more subjective, as well as patient-centered outcomes data. Outcome measures may be in the form of mortality in ICU or on the ward afterwards, as well as in the first year or longer after intensive care treatment, or may involve physical, psychological and cognitive data. Outcome measures may be a short or long term and may reflect side effects or complications and adverse incidents arising from intensive care management (Moreno, et al 2007).

Critical care nurses provide most of the direct care to patients in life threatening situations within intensive care units. Critical care nurses assess, plan, implement and evaluate health care services for patients suffering with a broad range of health conditions. All intensive care unit nurses care for extremely ill patients. However, Nurses in general intensive care units commonly provide care to patients suffering from cardiac disease and brain injuries. Accident victims and patients recuperating from complex surgeries frequently need nursing care of critically care specialists as well. Intensive care unit nurses work closely with physicians and other members of the health care team. They need to be skilled in the assessment of patients and capable of using high technique equipment. Critical care nurses must possess physical, mental, and emotional stamina to work with seriously ill patients and their loved ones (EfCCNa, 2007)

Critical care nurses have to consider many interrelated factors in making a prognosis regarding outcomes in critically ill patients, including age, co-morbidities, severity and irreversibility of the acute illness, physiological reserve, and response to therapy. It is possible that some nurses will consider a prolonged stay in the ICU because it may represent slow or absent response to ICU therapy (Williams, et al 2010).

Operational Definitions

Profile criteria: description of patient criteria on admission to intensive care unit including patient demographic data, medical and surgical history.

Clinical outcomes: includes hemodynamic parameter, length of ICU stay and patient condition at discharge either dies or still alive (discharge to

home or transferred to another unit in the hospital) and the presence of comorbidities.

Significance of the study

Statistics of Egyptian files of Intensive Care unit at Assiut University Hospital in 2015 revealed that the number of patients admitted to the general Intensive care unit had been (425 patients) total death were more than quarter of the total admission to the units. Clinical observation of researcher revealed that critically ill patients admitted to intensive care units are at high risk of death due to the severity of illness on admission, complex and multiple Interventional procedures they undergo in these settings. Many studies had done to describe criteria of patients admitted to critical care setting and their discharge criteria in western countries, but a few are done in our region and in our governorate and especially in the nursing field. So the current study was aimed to identify the criteria for those patients admitted to general intensive care unit at Assiut university hospital and is at higher rate for death during ICU stay.

Aim of the study

To assess profile criteria and clinical outcomes of critically ill patients admitted to general intensive care unit at Assiut University Hospital.

Research questions

This study was directed to answer the following questions :

- What are the criteria of critically ill patients admitted to general ICU?
- What are the outcomes of critically ill patients admitted to general ICU?

Patient & Methods

Research design:

Descriptive research design used to conduct the study.

Setting

The study was carried out in General intensive care unit at Assiut university hospital.

Sample

A convenient sample of all critically ill adult patients admitted to the unit over a period of 12 months from January to December 2016 in critical care units.

Inclusion criteria

All newly, adult patients admitted to the general Intensive Care Unit at Assiut university hospital, to assess patient from day of admission till his discharge.

Tools

Two tools were developed by the researcher and used in this study.

Tool one: patient profile characteristic's sheet this tool was developed by the researcher after reviewing the related literature's to assess patient's demographic data and health relevant data it comprised two parts.

Part I: Demographic date: This includes patient's code, age, sex, marital status and level of education, date of admission and date of discharge.

Part II: Medical data: include history of past medical and surgical problems, causes of ICU admission (respiratory, cardiovascular, trauma, neurology, gastrointestinal, or post-operative cause) to fulfill patient profile criteria.

Tool two: clinical outcome assessment sheet

The researcher developed this tool after reviewing related literatures and it includes three main parts.

Part I: assessment of hemodynamic parameters

This was developed by the researcher to evaluate the patient hemodynamic statute such as (Temperature, pulse, heart rate, mean arterial blood pressure, central venous pressure and fluid balance).

Part II: Assessment of Laboratory investigation

This was developed by the researcher to evaluate the patient laboratory data such as (Serum sodium, Serum potassium, Serum creatinine, Hematocrit, WBCs, Bilirubin and Urea), in addition to assessment of Arterial blood gases.

Part III: outcomes assessment sheet: this was developed to record the ICU length of stay, the patient's clinical outcomes and the condition on discharge. The discharge criteria, which included discharge to home, transfer to other unit, experience co-morbidities and mortality and duration of mechanical ventilation.

The overall reliability of both tools was tested using (α) Cronbach's test on the pilot study results. It was found that the reliability of the tool one equal 0.85 and the tool three equal 0.84 which was acceptable.

Methods

This study where carried out through two main phases as following-:

The preparatory phase

- An official Permission to conduct the study was obtained from the hospital responsible authorities in the General Intensive Care Unit at Assiut University Hospital after explaining the aim and nature of the study .
- An approval was obtained from the local ethical committee and the study was followed the common ethical principles in clinical research .
- The tool used in this study was developed by the researcher based on reviewing the relevant literature.

- Content validity: The tool was tested for content related validity by jury of 5 specialists in the field of critical care nursing and critical care medicine from Assiut University Hospital, and the necessary modifications were done.
- A pilot study carried out before starting of data collection to test the feasibility and clarity of the study tools on 10% of the sample, the analysis of pilot study define the modification required in the tool used, and the necessary modification was done prior to data collection, The studied subjects were excluded from the actual study.
- Protection of human rights (ethical considerations): Informed consent was obtained from each patient or from the responsible person for the unconscious patients. The investigator emphasized that the participation is voluntary and the confidentiality and anonymity of the subjects was assured through coding the data. Subjects were assured that can they withdraw from the study at any time without any rational.

Implementation phase

- Purpose of the study was simply explained to patients and their relatives in case of unconsciousness.
- The researcher started to collect data from patients on day of admission.
- The study involved 302 patients who admitted to the General Intensive Care Unit at Assiut University Hospital over a period of 12 months starting from January 2016 to December 2016. In addition, the following data were collected on admission from patient and from patient file include the following .
 - Demographic data as age, sex, marital state and occupation.
 - Complete medical history was taken including causes of current admission to intensive care unit, past medical history and past surgical history.
 - The researcher monitors vital signs (blood pressure (mm Hg), heart rate (beats/ min), temperature (degree^o), respiratory rate (cycles/ minute), mean arterial blood pressure (mm Hg), central venous pressure (cm / h₂o), and fluid balance (ml/24hr) it is done through collecting the data from patient file every day from admission to discharge.
 - Laboratory tests were recorded from the patient file including (serum sodium, serum potassium, bilirubin, leukocyte count, serum bicarbonate every day from admission to discharge.
 - And finally the researcher assessed the studied patients with previous mentioned setting for ICU discharge criteria (monitoring of the outcomes) by recording the following:
 - Discharge to home.
 - Transfer to another unit.

- Mortality.
- The length of patients' stays (LOS) from ICU admission till discharge.

Statistical analysis

The data were tested for normality using the Anderson-Darling test and for homogeneity variances prior to further statistical analysis. Categorical variables were described by number and percent (N,%), where continuous variables described by mean and standard deviation (Mean, SD). Chi-square test and fisher exact test used to compare between categorical variables where comparisons between continuous variables by t-test, Binary Logistic Regression was used to explain the predictive power in the study (Multiple regressions used for multivariate analysis). A two-tailed $p < 0.05$ was considered statistically significant. All analyses were performed with the IBM SPSS 20.0 software.

Results

Table (1): percentage distribution of the study sample in relation to the demographic data (N= 302).

Variables	No	%
Sex		
Male.	168	55.6
Female.	134	44.4
Age group		
18 -	86	28.5
30 -	58	19.2
50 - 65 years.	158	52.3
Mean \pmSD	37.82 \pm 10.84	
Occupation		
Student.	42	13.9
Employer.	82	27.2
Retired.	92	30.5
House wife.	86	28.5
Level of education		
Illiterate.	60	19.9
Read & write.	38	12.6
Primary.	56	18.5
Secondary.	68	22.5
Bachelor.	80	26.5
Marital status		
Single.	60	19.9
Married.	188	62.3
Divorced.	12	4.0
Widow.	42	13.9

Table (2): Percentage distribution of the study sample in relation to Causes of ICU admission (N=302).

Cause of ICU Admission	NO		Yes	
	No	%	No	%
1. Trauma patient	236	78.1	66	21.9
2. Respiratory disease	238	78.8	64	21.2
3. Elective Operation	256	84.8	46	15.2
4. Neurological disease	264	87.4	38	12.6
5. Cardiovascular disease	268	88.7	34	11.3
6. GIT disease	270	89.4	32	10.6
7. Post Arrest	280	92.7	22	7.3
8. Emergency Operation	280	92.7	22	7.3
9. Toxicity	280	92.7	22	7.3
10. Poisoning	290	96.0	12	4.0
11. Heat Stroke	294	97.4	8	2.6
12. Septic Shock	296	98.0	6	2.0
13. Gynecological & obstetric	296	98.0	6	2.0
14. Burn	300	99.3	2	0.7
15. Animal Bite	300	99.3	2	0.7
16. Drowning	300	99.3	2	0.7
17. Hematological Disease	300	99.3	2	0.7
18. Co-morbidities				
• HTN	201	66.6	101	33.4
• DM	212	70.2	90	29.8

Cause of ICU Admission	NO		Yes	
	No	%	No	%
• Cirrhosis	266	88.1	36	11.9
• Kidney Failure	272	90.1	30	9.9
• Malignancy	290	96.0	12	4.0

HTN: hypertension, DM: diabetes mellitus.

Some patient had more than one cause of admission.

Table (3): Frequency distribution of the study sample in relation to the Past medical (N=302).

Past medical & surgical history	No		yes	
	No	%	No	%
1. Respiratory disease.	212	70.2	90	29.8
2. GIT disease.	238	78.8	64	21.2
3. Cardiovascular disease.	260	86.1	42	13.9
4. Renal disease.	260	86.1	42	13.9
5. Neurological disease.	278	92.1	24	7.9
6. Neuromuscular disease.	284	94.0	18	6.0
7. Endocrine disorder.	286	94.7	16	5.3
8. Allergy.	294	97.4	8	2.6
9. Traumatized patient.	295	97.6	7	2.3

Table (4): percentage distribution of the study sample in relation to their outcomes criteria (N=302).

Outcome	No	%
Mortality		
▪ Alive	144	47.7
1- Discharge to home	50	16.6
2- Transfers to other unit	92	30.5
▪ Death	158	52.3
Experience co-morbidities	40	13.2
Length of stay		
▪ <5 days	188	62.3
▪ 5- <15 days	92	30.5
▪ ≥15 days	22	7.3
▪ Mean+SD	5.38±4.20	

Table (5): Distribution of mean score of the study sample according to hemodynamic parameter on 1st day of admission until 5th day (N=302).

Variables	1 st day	2 nd day	3 rd day	4 th day	5 th day	P. value
Temperature	37.51±1.15	37.63±1.13	37.75±0.94	37.68±0.99	37.8±0.9	<0.001**
Pulse	103.31±33.66	103.95±33.93	79.01±50.86	105.32±32.94	93.12±32.35	<0.001**
Respiration	25.68±7.12	25.43±6.59	25.94±7.06	24.09±6.06	23.86±5.34	<0.001**
MABP	66.66±20.02	66.24±19.96	68.69±21.58	73.01±23.24	70.78±18.06	<0.001**
CVP	10.28±7.91	11.09±8.39	12.29±7.82	12.44±7.4	12.52±7.76	<0.001**
Fluid balance	1.28±0.45	1.29±0.46	1.34±0.48	1.32±0.47	1.28±0.45	1.000 Ns

*MABP: Mean Arterial Blood Gas, CVP: Central Venous Pressure. Ns >0.05 non-significant, *P<0.05 significant, **P<0.01 highly significant.*

Table (6): Distribution of mean score of the study sample according to Laboratory investigation on 1st day of admission until 5th day (N=302).

Laboratory investigation	1 st day	2 nd day	3 rd day	4 th day	5 th day	P. value
Serum sodium	141.72±15.61	141.55±15.65	141.53±10.46	142.17±9.77	140.51±7.52	0.225 Ns
Serum potassium	5.17±12.08	5.19±12.09	4.08±1.06	4.18±0.97	4.19±0.84	0.16 Ns
Serum creatinine	178.1±170.71	161.05±153.46	154.4±154.34	147.17±146.61	137.68±138.17	<0.001**
Hematocrit	32.37±10.15	30.75±9.05	31.73±9.87	31.27±7.91	31.48±7.51	<0.001**
WBCs	15.22±8.59	14.73±9.01	14.04±8.06	12.96±7.57	13.5±8.38	0.006*
Urea	14.8±20.79	15.03±18.93	13.46±11.13	13.5±11.22	13.13±10.39	0.364 Ns
Bilirubin	9.76±11.55	9.47±11.34	9.1±10.68	8.32±9.48	8±8.12	<0.001**

Ns >0.05 non-significant, *P<0.05 significant, **P<0.01 highly significant.

Table (7): Distribution of mean score of the study sample according to Arterial Blood Gases parameters on 1st day of admission until 5th day (N=302).

Variables	1 st day	2 nd day	3 rd day	4 th day	5 th day	P. value
PaO2	89.58±48.47	87.69±34.9	81.19±37.25	81.73±35.68	83.48±37.51	<0.001
PH	7.39±0.12	7.4±0.1	7.42±0.1	7.4±0.11	7.41±0.11	0.663
Fio2	30.41±48.26	82.18±35.47	83.4±37.09	84.79±36.79	80.81±34.35	0.963
HCO3	22.6±6.98	22.69±6.98	23.51±6.93	23.45±6.85	24.36±6.86	0.774

Table (8): Relation between patients admission criteria and outcomes (N=302).

Variables	Alive (144)		Death (158)		P. value
	No	%	No	%	
Age group					< 0.001 **
from 18-30 years (N=86)	60	41.7	26	16.5	
from 30-50 years (N=58)	36	25.0	22	13.9	
from 50- 65 years (N=158)	48	33.3	110	69.6	
Sex					0.367 Ns
Male (N=168)	84	58.3	84	53.2	
Female (N=134)	60	41.7	74	46.8	
GCS Level					< 0.001 **
Mild (N=140)	122	84.7	18	11.4	
Moderate (N=48)	14	9.7	34	21.5	
Severe (N=114)	8	5.6	106	67.1	
MV connection					< 0.001 **
Yes (N=158)	54	37.5	104	65.8	
No	90	62.5	54	34.2	
Length of stay					1.000 Ns
<5 days (N=188)	94	65.3	94	59.5	
5- <15 days (N=92)	46	31.9	46	29.1	
>15 days (N=22)	4	2.8	18	11.4	

Ns >0.05 non-significant, *P<0.05 significant, **P<0.01 highly significant.

Table (9): Relation between patients causes of ICU admission and outcomes (N=302).

Variables	Outcome				P. Value
	Alive 144		Death 158		
	No	%	No	%	
1. Trauma patient	16	11.1	30	18.9	0.024*
2. Respiratory disease	14	9.7	25	15.82	0.003**
3. Elective Operation	12	8.33	20	12.6	0.011*
4. Neurological disease	12	8.33	18	11.3	0.063 NS
5. Cardiovascular disease	17	11.8	16	10.12	0.068 NS
6. GIT disease	20	13.8	17	10.75	0.004*
7. Post Arrest	10	6.9	5	3.16	0.003*
8. Emergency Operation	10	6.9	8	5.06	0.386 NS
9. Toxicity	9	6.2	6	3.79	0.024*
10. Poisoning	6	4.1	2	1.26	0.008**
11. Heat Stroke	4	2.77	5	3.16	0.951 NS
12. Septic Shock	2	1.38	4	2.53	0.667 NS
13. Gynecological & obstetric	5	3.47	1	0.63	0.094 NS
14. Burn	1	0.69	1	0.63	0.303NS
15. Animal Bite	2	1.38	0	0	0.62 NS
16. Drowning	2	1.38	0	0	0.62 NS
17. Hematological Disease	2	1.38	0	0	0.62 NS

*N .s.P >0.05 non-significant *P<0.05 significant **P<0.01 highly significant*

Table (1): Shows that more than half of the study sample were males, aged from 50- 65 years old and married (55.6%, 52.3%, and 62.3%) respectively. In addition, a high percent of the sample were retired and had a bachelor degree (30.5% and 26.5%) respectively.

Table (2): Illustrates suggests that regard reasons of admission to general intensive care unit trauma, respiratory disease, elective postoperative admission and neurological disease were the main causes of admission (21.9%, 21.2%, 15.2% and 12.6% respectively). (11.3%, 10.6% and 7.3%) were admitted due to cardiovascular, GIT and post arrest disease respectively. Regard presence of chronic disease hypertension, diabetes mellitus and cirrhosis were common (33.4%, 29.8 and 11.9%) respectively.

Table (3): Demonstrates that regarding presence of past medical about one third of the studied sample had respiratory diseases (29.8%). high percentage had GIT, cardiovascular disease, Renal disease and Neurological disease (21.2%, 13.9%, 13.9% and 7.9%) respectively.

Table (4): Illustrates the outcomes of the studied patients according to their assessment data on discharge. It was found that 52.3% of patients were died that represent half of the included sample and one third of patients discharged alive from ICU were transferred to other units in the hospital (30.5%). Regard length of ICU stay, two third of the studied

sample stayed less than 5 days (62.3%) and low percent stayed more than 15 days (7.3%) with mean length of stay (5.38±4.20).

Table (5): Concerning to the vital signs this table exhibits highly significant difference between first and fifth day of all parameter in the studied patient with mean (37.51+1.15 & 37.8+0.9 respectively) for the temperature and (103.31+33.66 & 93.12+32.35 respectively) for pulse rate. And shows no significant difference regarded fluid balance (p. value 1.000) and mean (1.28+0.45 & 1.28+0.45 respectively).

Table (6): Shows that there is highly significant difference from the first day of admission and fifth day of ICU stay in relation to serum creatinine, Hematocrit level and serum bilirubin (P. Value <0.001), and significant difference in relation to white blood cells count (P. Value 0.006), While no significant difference regard serum sodium, serum potassium and serum urea P. Value (0.225, 0.16 and 0.364) respectively.

Table (7): Reveales no significant difference from first to fifth day of ICU admission regarded all ABG parameter except for pao2 were value highly significant (0.001)

Table (8): Demonstrates outcomes of the studied patients according to the admission criteria, more than one third of alive group aged from 18-30 years (44.7%), about two third were males (58.3%), majority of them where mild disturbed conscious

level on admission (84.7%), and more than two third of them were not connected to mechanical ventilation and stayed less than 5 days (62.5% & 65.3%) respectively.

Table (9): Shows relation between the patients' outcomes and causes of ICU admission, it revealed that there is highly statistical difference between both alive and death group regard cause of admission were trauma, respiratory causes, elective post operative admission have a higher mortality rate

Discussion

The outcomes of intensive care units affected not only by the services provided in that units, the skill and timing with which they are provided, even though, it demands a tremendous amount of time and efforts of the medical and nursing staff to treat and improve survival of the critically ill patients (**Isamade, et al., 2007**) The type and facilities available influences the variety of critical cases that can be handled (**Chalya, et al., 2011**).

Regarding description of current study sample the result revealed that study sample; include 302 critically ill patients who were admitted to General intensive care unit. Numbers of male more than half of the sample, there were 55.6% males and 44.4% females, The type and facilities available influences the variety of critical cases that can be handled. **Ala., et al., (2012)**, documented it, Percent of males being admitted to the hospital are more than female patients is also considering the fact that it's a male dominating community, which offers importance to males in the families with least precedence to ladies on this area. Also this comes in keeping with study done by **Cetin Kaymak, (2016)**, who reported that From 690 ICUs, a total of 4188 patients were included within his study; approximately 54% were males.

Regarding age group most common age group were those from (50 ≥ 65 years) account for 52.3%, it may be related to high percentage of chronic disease in this age group more than younger groups that cause repeated admission to critical care setting. This disagrees with the study done by **Poluyi, et al., (2016)**, where his sample included 647 patients were admitted into the ICU, there were 352 (54.4%) males and 295 (45.6%) females. The young and the middle-aged group (20 - 59 years) accounted for 66.9 % (433) of all the ICU admissions. On the other hand it comes in contrast with the study done by **Lange, et al., (2009)**, as his study sample had Mean age group (63 ± 23 years) and most

patients (28%) were between 70-80 years old. Also the same result reported by **Ala, et al., (2012)**, where patient aged 20 - 29 years old representing (19.4%) were more common, and **Ashwini, et al., (2016)** who reported that Patients aged 20-39 year old representing (38.54%) were the most common age group admitted to the ICU.

Regarding the explanations of ICU admission causes, the type of admission differs between countries and is probably related to the health care system. The result of current study showed that trauma is the first leading cause of admission and this may be due to the high percentage of road traffic accident and also the hospital serve all upper Egypt region, also respiratory diseases represent the same percentage of admission, while elective post-surgery causes of admission represent the third cause of admission to intensive care unit as most of patient admitted to stabilize their hemodynamic parameter and as follow up until patient is transfer to the surgical units in the hospital. This comes in line with the study done by **Poluyi, et al., (2016)**, who mention that Severe Traumatic brain injury (TBI) accounting for 77.3% (160) of all Neurosurgical admission, Post-operative surgical care across all specialties accounted for 36.6% of all indications for ICU admission during their study while respiratory causes account only (7.6%) of total admission.

Concerning the presence of co-morbidities before admission to ICU the results of the current study showed that patients had hypertension representing the highest percentage, then those had DM and they are probably the most common varieties of co-morbidities.

Regarding previous medical history, the presence of clinical issues, even trauma or having surgical history has an important influence on patient survival and improvement status. Current study documented that most common past history were respiratory disease including (COPD, asthma... act), GIT problems, cardiovascular and renal disease. This in line with **Mayr et al., (2006)**, **Yousuf, et al., (2013)** they indicated that the chronic illness is a common factor for death in the ICU.

Regarding GCS of the current sample revealed that more than third of the sample had mild disturbed conscious level and other third had severe disturbed conscious level, this may be contributed that a high percentage of admission were trauma patients who main criteria is

disturbed conscious level, As more deterioration of conscious level on admission cause poor outcomes and increase risk of complications during the period of ICU stay. This agrees with the study done by **Ala, et al., (2012)** who documented that GCS Mean \pm SD in their studied sample was (11.5 \pm 0.32) and Regard mechanical ventilation connection there were 52.3% connected.

Regarding main measured outcomes (death & survival rate) the result of current study revealed that from total admitted patient to ICU more than half were die during intensive care unit stay. This disagreed with the study done by

El Said, (2013), Reported that of 114 patients (56.4%) were discharged from the ICU after improvement while 88 patients (43.6%) were dying during ICU stay.

For the length of ICU stay result of current study demonstrate that less than two third of the studied sample were stay less than five days in intensive care, this is related that high number of admission were electively admitted after surgery for post-operative monitoring purpose, the Prolonged ICU stay and mortality are more frequent in more severely ill patients at admission and in patients submitted to emergency surgery. Hospital mortality is more frequent in patients who stayed longer in ICU. It is due to exposure to more invasive procedures and nature of ICU atmosphere, This agrees with the study done by **Mukhopadhyay, et al., (2014)** who mention that LOS were about 3 days with a mean (3 - 6 days) for their study sample. Also in same line with another study done by **Ala, et al, (2012)** who reported ICU stays (7.9 \pm 0.8) in their studied sample.

Regard the relation between severity of GCS and death, the current study revealed that the more severe decrease conscious level represented by GCS (3-5) more reliable for death, as majority of death group has sever decrease in conscious level on admission representing more than two third. This agreed with study mentioned by **Tran et al., (2015)**, who reported that patients with severe TBI at Mulago who measured an initial GCS of (3_5) were less likely to survive than those who measured. Concerning **sex**, the current study shows no relation between sex and the risk for death (p. value 0.367)

According to the relation between LOS and death, ICU length of stay is the most important determinant of ICU cost and resource utilization. In the current study showed no relation between length of ICU stay and the

statue on discharge but the number of patients in death group stay more than 15 days for those in a live group was higher.

Conclusion & Recommendations

Based on the findings of the present study, it can be concluded that the majority of patients admitted to general intensive care unit and included in the current study are elderly male patients, acute trauma patients, undergoing elective surgery or had respiratory problems. This study highlights the profile characteristic for those patients and describe their outcomes after course of ICU stay whereas more than half of the studied sample die before discharge from the ICU.

Based on the study findings, the following Recommendations are Suggested

- Future similar studies should be carried to reveal criteria for intensive care admissions
- Use mortality prediction model among the critically ill patients from first day of admission to sort patients according to the severity of their condition and mortality risk.
- Develop strategies that necessitate training the nurses on how to use the scoring systems in the assessment of patients' health statue after admission to ICU.

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