

A study of various factors responsible for worse outcome in the patients admitted to ICU of tertiary health care center

Suraj R Dhoot^{1*}, Chandrakant Raibhoge², Padmakar Girhepunje³

^{1,2}Associate Professor, ³Junior Resident, Department of Medicine, Government Medical College, Latur, Maharashtra, INDIA.

Email: san.s2006@rediffmail.com

Abstract

Introduction: The ICU is characterized as the hospital in to a hospital. The intensive care hospitalized patients with reversible illnesses that can be improved with detail follow up and complication treatments. **Aims and Objectives:** To Study of Various Factors responsible for Worse Outcome in the Patients admitted to ICU of tertiary health care center.

Materials and Methods: This was a prospective observational cross sectional study was undertaken ICU tertiary care centre and hospital. The study period was of 2 years. (Nov.2013-Nov. 2015)All patients admitted to ICU of tertiary care centre during period of 2 years More than 500 patients Univariate analysis was carried out of chi-square for categorical variables Odd ratio is calculated to determine association between cause and risk factor. Year is divided into three seasons. Winter from November to February.Summer from March to June and rainy season from July to October. Patients classified low socioeconomic group on basis of BPL card. **Result:** In our study we have found that The of Majority of the Patients admitted to ICU were due to Myocardial infarction , Heart failure Poisoning, Snake bite, Stroke, Hepatic encephalopathy, Meningitis, Dengue hemorrhagic fever, Pneumonia, Sepsis, COPD acute exacerbation and major co-morbid conditions were Hypertension, Diabetics, Smoking and Alcoholism. Hypertensive patients have 5 times more risk for myocardial infarction, Diabetes patients have 7.4 times more risk of myocardial infarction, and Smoker patients have 7.4 times more risk for myocardial infarction. Alcoholic patients have 2.159 times more risk for myocardial infarction, hypertensive patient have 3.3 times more risk for Heart Failure so diabetes patients have 1.7 times more risk for Heart Failure smoker patients have 1.2 times more risk for heart failure. So alcoholic patients have 1.3 times more risk for heart failure, hypertensive patients have 5.1 times more risk for stroke. Diabetes patients have 2.9 times more risk for stroke, alcoholic patients have 11.7 times more risk for hepatic encephalopathy, and smoker patients have 2.6 times more risk for COPD. **Conclusion:** From our study we found that the Co-morbid conditions like Hypertension, Diabetics, Smoking and Alcoholism were responsible worst outcome in ICU patients

Key Words: ICU (Intensive Care Unit), Hypertension, Diabetics, Smoking , Alcoholism.

*Address for Correspondence:

Dr. Suraj R Dhoot, Associate Professor, Department of Medicine, Government Medical College, Latur, Maharashtra, INDIA.

Email: san.s2006@rediffmail.com

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INTRODUCTION

The ICU is characterized as the hospital in to a hospital. The intensive care hospitalized patients with reversible

illnesses that can be improved with detail follow up and complication treatments. From practical side there are cases in the ICU where most complex and costly treatment cannot change the Prognosis of Patient . An intensive care unit (ICU) is a continuously busy ward in which critically ill patients are on life support treatment under intensive monitoring. Doctors, nurses and technologies and increasing frequency of older and more acutely ill patients in ICU has resulted in more expensive care. In the recent years healthcare system has come under increasing scrutiny so there is a need to monitor and assess the quality, even with severity adjustment.³ Since last century there is changing trend of diseases frequency as the beginning of 20th century infection diseases are major cause of mortality but over a period of

time diseases trend changes. Now the non-communication diseases are major cause of mortality and infectious diseases are major cause of mortality in ICU in developing countries like India. Presently acutemyocardial infarction, Heart failure poisoning, Snake bite, Respiratory illness like acute exacerbation of chronic obstructive pulmonary diseases, pneumonia, central nervous system diseases like stroke, meningitis, epilepsy, renal pathology like acute failure and acute glomerulonephritis and metabolic diseases like diabetic ketoacidosis are common diseases associated with ICU admission and ICU related mortality.^{4,5,6}

MATERIALS AND METHODS

This was a prospective observational cross sectional study was undertaken in ICU tertiary care centre and hospital. The study period was of 2 years. (Nov.2013-Nov. 2015) All patients admitted to ICU of tertiary care centre during period of 2 years More than 500 patients , All patients admitted to ICU of tertiary care centre, Age >13 years. Those are not admitted in ICU, Patients below 12 years of age, Chronic patients having repeated ICU admission, HIV positive and immune compromised patients, Very rare diseases with less than 30 cases admitted in 2 years excluded from the study. Adults with various etiology admitted to ICU were included in study. On arrival to emergency unit, initially stabilization of vital function was done; acute respiratory and cardiovascular problems level of consciousness, GCS score were carried out on all the patients. Clinical signs like heart rate. Blood pressure, papillary reflexes, Presence of any focal neurologic deficit and finding on fundoscopy were noted. Etiology was determined on the basis of history by relatives or paramedics, clinical examination and laboratory investigations, routine investigations like haemogram, renal and liver function test. Blood sugar, sr. electrolytes were performed. Investigations, such as lumbar puncture, CT scan/ MRI scan and metabolic work-up, ECG depending on the clinical presentation were performed.

Following initial evaluation in emergency unit, The patients were transferred to intensive care unit where they had further treatment. Standard practice guidelines, as contained in the protocol of the hospital, were used in the management of the patients. Statistical package for social science (SPSS, IBM) version 21.0 and MS Excel used for analysis of data. Univariate analysis was carried out of chi-square for categorical variables. P value <0.05 was considered as significant. Odd ratio is calculated to determine association between cause and risk factor. Year is divided into three seasons. Winter from November to February. Summer from March to June and rainy season

from July to October. Patients classified low socioeconomic group on basis of BPL card.

RESULT

Table 1: Co-morbid conditions as risk factor in ICU patients

Sr.No	Diseases	HTN	Diabetics	Smoking	Alcoholic	Total
1	Myocardial infarction	90	95	51	54	148
2	Heart failure	20	14	09	10	34
3	Poisoning	10	12	12	26	128
4	Snake bite	06	03	02	02	42
5	Stroke	40	31	22	16	60
6	Hepatic encephalopathy	07	12	16	26	34
7	Meningitis	04	08	04	05	36
8	Dengue hemorrhagic fever	02	01	02	01	32
9	Pneumonia	06	06	10	10	52
10	Sepsis	15	12	05	10	70
11	COPD acute exacerbation	20	08	25	10	64
Total		220	202	158	170	700

The of Majority of the Patients admitted to ICU were due to Myocardial infarction, Heart failure Poisoning, Snake bite, Stroke, Hepatic encephalopathy, Meningitis, Dengue hemorrhagic fever Pneumonia, Sepsis, COPD acute exacerbation and major co-morbid conditions were Hypertension, Diabetics, Smoking and Alcoholism.

Table 2: Distribution of Myocardial infarction with respect to Hypertension

	Myocardial infarction	Non-myocardial infarction
HTN	A(90)	B(130)
Non HTN	C(58)	D(422)

Risk Estimate			
Value	95% CI		
	Lower	Upper	
Odds	5.037	3.430	7.396

The present study finding shows odds ratio 5.0 so hypertensive patients have 5 times more risk for myocardial infarction. Hypertension is significant risk factor for myocardial infarction.

Table 3: Distribution of Myocardial infarction with respect to Diabetes

	Myocardial infarction	No-myocardial infarction
Diabetics mellitus	A(95)	B(107)
Non-diabetic	C(53)	d(445)

Risk Estimate			
Value	95% CI		
	Lower	Upper	
Odds Ratio	7.455	5.013	11.085

The present study finding shows odds ratio. 7.4 so diabetes patients have 7.4 times more risk of myocardial infarction. Diabetes is significant risk factor for myocardial infection.

Table 4: Distribution of Myocardial infarction with respect to Smoking

	Myocardial infarction	No-myocardial infarction
Smoker	A(95)	B(107)
Non-smoker	C(53)	d(445)
Risk Estimate		
	Value	95% CI
		Lower Upper
Odds Ratio	7.454	5.013 11.085

The present study finding shows odds ratio 7.4 so smoker patients have 7.4 times more risk for myocardial infarction.

Table 5: Distribution of Myocardial infarction with respect to Alcoholism

	Myocardial infarction	No-myocardial infarction
Alcoholic	A(54)	B(116)
Non-alcoholic	C(94)	d(436)
Risk Estimate		
	Value	95% CI
		Lower Upper
Odds Ratio	2.159	1.321 4.116

The present study finding shows odds ratio 2.159 so alcoholic patients have 2.159 times more risk for myocardial infarction.

Table 6: Distribution of Heart failure with respect to Hypertension

	Heart failure	No-heart failure
HTN	A(20)	B(200)
Non-HTN	C(14)	d(466)
Risk Estimate		
	Value	95% CI
		Lower Upper
Odds Ratio	3.329	1.648 6.722

The present study finding shows odds ratio 3.3 so hypertensive patient have 3.3 times more risk for Heart Failure

Table 7: Distribution of Heart failure with respect to Diabetes

	Heart failure	No-heart failure
Diabetics	A(14)	B(188)
Non-Diabetics	C(20)	d(478)
Risk Estimate		
	Value	95% CI
		Lower Upper
Odds Ratio	1.780	.881 3.597

The present study finding shows odds ratio 1.7 so diabetes patients have 1.7 times more risk for Heart Failure

Table 8: Distribution of Heart failure with respect to Smoking

	Heart failure	Non-heart failure
Smoker	A(09)	B(149)
Non-Smoker	C(25)	d(517)
Risk Estimate		
	Value	95% CI
		Lower Upper
Odds Ratio	1.249	.571 2.734

The present study finding shows odds ratio 1.2 so smoker patients have 1.2 times more risk for heart failure.

Table 9: Distribution of Heartfailure with respect to Alcoholism

	Heart failure	Non-heart failure
Alcoholic	A(10)	B(160)
Non- Alcoholic	C(24)	d(506)
Risk Estimate		
	Value	95% CI
		Lower Upper
Odds Ratio	1.318	.617 2.814

The present study finding shows odds ratio 1.3. So alcoholic patients have 1.3 times more risk for heart failure.

Table 10: Distribution of Stroke with respect to Hypertension

	Stroke	Non-stroke
HTN	A(40)	B(180)
Non- HTN	C(20)	d(460)
Risk Estimate		
	Value	95% CI
		Lower Upper
Odds Ratio	5.111	2.909 8.981

The present study finding shows odds ratio 5.1 so hypertensive patients have 5.1 times more risk for stroke.

Table 11: Distribution of Stroke with respect to Diabetes

	Stroke	Non-stroke
Diabetic	A(31)	B(171)
Non- diabetic	C(29)	d(469)
Risk Estimate		
	Value	95% CI
		Lower upper
Odds Ratio	2.932	1.716 5.010

The present study finding shows odds ratio 2.9 so diabetes patients have 2.9 times more risk for stroke.

Table 12: Distribution of Hepatic Encephalopathy with respect to Alcoholism

	Hepatic	No hepatics encephalopathy
Alcoholic	A(26)	B(144)
Non- Alcoholic	C(08)	d(522)

Risk Estimate			
	Value	95% CI	
		Lower	Upper
Odds Ratio	11.781	5.222	26.579

The present study finding shows odds ratio 11.7 so alcoholic patients have 11.7 times more risk for hepatic encephalopathy.

Table 13: Distribution of Hepatic Encephalopathy with respect to COPD

	COPD exacerbation	Non COPD
Smoker	A(25)	B(123)
Non- Smoker	C(39)	d(513)

Risk Estimate			
	Value	95% CI	
		Lower	Upper
Odds Ratio	2.674	1.559	4.585

The present study finding shows odds ratio 2.6 so smoker patients have 2.6 times more risk for COPD.

DISCUSSION

In the past two decades, there has been tremendous growth of intensive care medicine in India. However, there are scanty data on the organizational aspects, case mix and practice patterns in Indian Intensive Care Units (ICUs). Most of the available information comes from either single-center studies or studies in specific groups of patients or conditions.⁷⁻¹³ A study by Parikh and Karnad in a large public hospital ICU in Mumbai had an observed mortality of 36%, SMR of 1.67 and lower intensity of interventions.⁹ Given the increased demand by the aging population in presence of resource limitations, it is important to know the outcomes of elderly patients admitted to the ICU and factors contributing to these outcomes. Outcomes of elderly populations have previously been studied^{10, 11, 12}, but aside from a large dataset of Medicare beneficiaries in the United States¹³, most reports are restricted to small patient groups or preselected geriatric cohorts. Knowledge of long-term outcomes of elderly ICU patients is also limited as most studies have data for only 1-2 years following discharges from the hospital.^{14, 15}

In our study we have found that The of Majority of the Patients admitted to ICU were due to Myocardial infarction, Heart failure Poisoning, Snake bite, Stroke, Hepatic encephalopathy, Meningitis, Dengue hemorrhagic fever Pneumonia, Sepsis, COPD acute

exacerbation and major co-morbid conditions were Hypertension, Diabetics, Smoking and Alcoholism hypertensive patients have 5 times more risk for myocardial infarction diabetes patients have 7.4 times more risk of myocardial infarction smoker patients have 7.4 times more risk for myocardial infarction. Alcoholic patients have 2.159 times more risk for myocardial infarction, hypertensive patient have 3.3 times more risk for Heart Failure so diabetes patients have 1.7 times more risk for Heart Failure smoker patients have 1.2 times more risk for heart failure. So alcoholic patients have 1.3 times more risk for heart failure, hypertensive patients have 5.1 times more risk for stroke. Diabetes patients have 2.9 times more risk for stroke, alcoholic patients have 11.7 times more risk for hepatic encephalopathy, and smoker patients have 2.6 times more risk for COPD.

CONCLUSION

From our study we found that the Co-morbid conditions like Hypertension, Diabetics, Smoking and Alcoholism were responsible worst outcome in ICU patients.

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