FACTORS AFFECTING CORONAVIRUS DISEASE OUTCOME IN PATIENTS ADMITTED AT SAIDU TEACHING HOSPITAL, SWAT

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ABSTRACT:

OBJECTIVES:

The study aimed to investigate the factors affecting corona virus disease outcome of patient admitted to critical care units of Saidu Teaching Hospital Swat.

METHODOLOGY:

A retrospective cohort study design used for the study. The study was conducted in Saidu Teaching Hospital Swat, from 23rd March 2020 till 2nd June 2020 and followed till 30th June 2020. Consecutive/census sampling technique was used in the study. Total 125 patients were sampled in which 99 (79%) were male and 26 (21%) were female. Out of 125 patients 63 were discharged from hospital and 62 died in hospital.

RESULTS:

Mean age of the participants was 56.25 years with standard deviation of 14.45 years. The statistical difference was observed between outcomes of comorbidity in comparison to no comorbidity with P-value (0.001). Oxygen saturation significantly affected outcome in this study. The mean saturation results show that there was statistical difference in outcome of the patient presented with oxygen saturation either high or low.

CONCLUSION:

Older age, comorbidity, high white blood cells count, increased blood urea, serum creatinine, increased D -Dimer level are associated factor for mortality in coronavirus diseased patients.

KEYWORDS: *COVID-19, Mortality, Outcome, Oxygen, Comorbidity*

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INTRODUCTION:

Coronavirus disease is caused by emerging zoonotic agent named as novel coronavirus (2019-nCOV). It is initially recognized in China in December 2019, when unexplained severe respiratory illness (pneumonia) cases reported in multiple hospitals of Wuhan City, Hubei Province, and later confirmed as severe respiratory distress syndrome caused by Novel Coronavirus[1-3]. Diseased caused by COVID-19 is named as corona virus disease. Syndrome caused by the pathogen results severe respiratory conditions which needs intensive care unit"s management[4]. World Health Organization (WHO) declared coronavirus disease 2019 as a public health emergency worldwide on 30th

January 2020[5]. 10357662 people effected globally and 508055 mortality reported till 1st July 2020 that shows 4.9% overall fatality[6]. Pakistan is also in effect hit of coronavirus, according to WHO report 508055 cases and 4395 deaths occurred in Pakistan[7]. Previous studies conclude that high fever, dyspnea, increase respiratory rate, D-Dimer, albumin, procalcitonin, lymphocyte count, neutrophil and white blood cells count risk factor for patient to need intensive care unit care[8-10]. Clinical research is crucial in emerging infectious outbreak for an effective public health response. Due to its novelty reporting of clinical features, laboratory findings and complication are needed. The study aimed to investigate the factors affecting corona virus disease outcome of patient admitted to ICU/HDU of Saidu Teaching Hospital Swat.

METHODOLOGY:

A retrospective cohort study design used for the study. The study was observational single centered. The study was conducted in Saidu Teaching Hospital Swat. Saidu Teaching Hospital is 1200 beds tertiary care hospital division. It is dedicated hospital for coronavirus disease patient with critical care units" facilities. Study conducted on patient admitted to COVID-19 critical care units from 23rd March 2020 to 2nd June 2020 and followed till 30th June 2020. Consecutive/census sampling technique was used in the study and participants included after fitting on inclusion and exclusion criteria. The study was approved by ethical committee of Saidu Medical College Swat. Permission for data collection was taken from hospital administration. Informed consent was waived due to COVID-19 emergency area in context of emerging infectious disease. Patient admitted to COVID-19 ICU/HDU and having COVID-19 PCR positive along with definite outcome (discharged/died) were included. A checklist developed from previous studies and validated by 3 experts in field used for data collection. Checklists were filled by independent investigators from patient data/charts. Collected data was entered into SPSS 21 and analyzed accordingly. Descriptive statistic and inferential statistics applied accordingly. Mean and standard deviation for quantitative variables and mode percentage for qualitative variable were computed. For qualitative variables Chi-square and independent sample T-tests for quantitative variable applied.

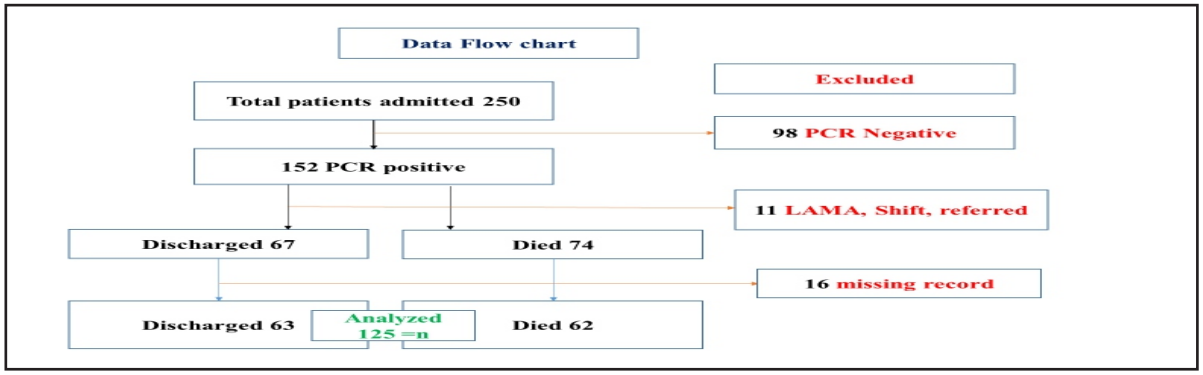

Figure 1: Data Flow of the Study

RESULTS:

Table 1: Distribution of Demographic Variables and Co-Morbidities Compared in Both Groups

Gender	N(%)	Discharged (%)	Died (%)	P Value
Male	99 (79)	54 (86)	45 (73)	0.07
Female	26 (21)	9 (14)	17 (27)	0.000 Sig
Comorbidity	66 (53)	22 (18)	44 (35)	
Diabetes	47 (37)	19 (15)	28 (22)	0.08
Hypertension	35 (28)	14 (11)	21 (17)	0.1
Coronary Artery Disease	4 (3)	2 (1.5)	2 (1.5)	0.9
Ischemic Heart Disease	5 (4)	1 (1)	4 (3)	0.1

Table 2: Comparison of Sign and Symptoms in Both Groups

	N (%)	Discharged (%)	Died (%)	P-Value
Sign and Symptoms	121 (97)	60 (48)	61 (49)	0.3
Fever	103 (83)	55 (44)	48 (39)	0.09
Cough	100 (80)	50 (40)	50 (40)	0.5
Tachypnea	40 (32)	20 (16)	20 (16)	0.9
Dyspnea	99 (79)	47 (37)	52 (42)	0.3

Table 3: Laboratory Findings and Outcome

	N (%)	Discharged (%)	Died (%)	P-Value
WBC more than 10k	58 (70)	14 (19)	42 (51)	0.00
Neutrophil * more than 75	65 (85)	23 (30)	42 (55)	0.18
Lymphocytes less than 20	64 (89)	21 (29)	43 (60)	0.005
SGPT more than 40	30 (65)	8 (17)	22 (48)	0.1
LDH more than 250	28 (84)	7 (20)	21 (62)	0.1
CRP more than 40	38 (83)	12 (26)	26 (57)	0.1
Blood Urea more than 40	40 (63.5)	6 (9.5)	34 (54)	0.00
Serum Creatinine more than 1.2	39 (54)	5 (7)	34 (47)	0.00
Hypersensitive Troponin I	11 (61)	0	11 (61)	0.01
D-Dimer more than 500	42 (82)	12 (24)	30 (59)	0.03

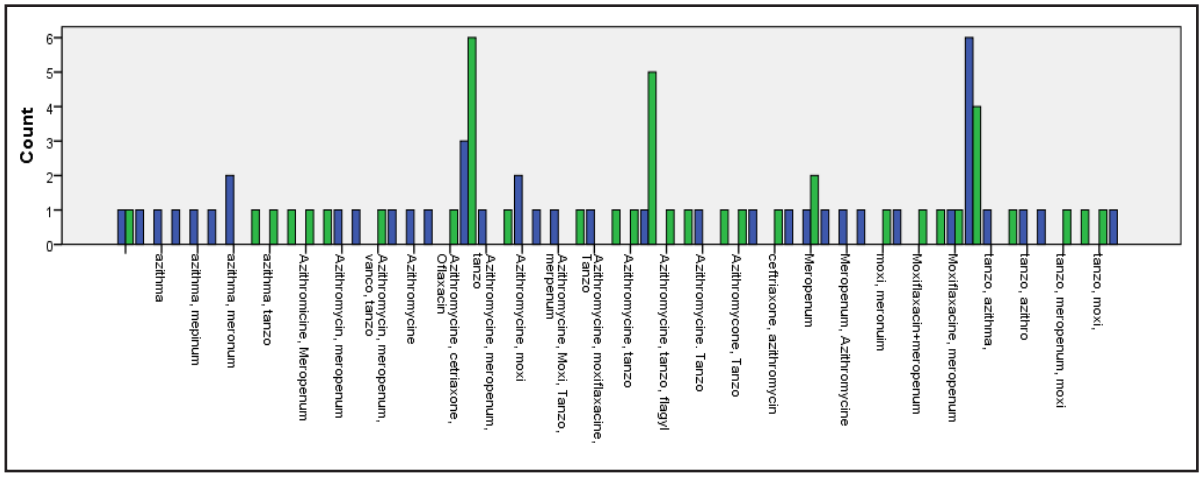

Figure 2: Frequency of Medicine Used in Both Groups (remove the title heading from the figure)

Table 4: Comparison of Complication in Outcome

	N (%)	Discharged (%)	Died (%)	P- Value
Complication	56 (46.3)	3 (2.5)	53 (43.8)	0.000
Shock	4 (6.9)	0	4 (6.9)	
Acute Cardiac Injury	14 (25)	0	14 (25)	0.000
Acute Kidney Injury	34 (51)	4 (6)	30 (45)	0.000
Acute Respiratory Distress Syndrome	51 (64)	2 (3)	49 (61)	0.000
Acute Respiratory Injury	10 (16)	0	10 (16)	0.007
Hyper Glycemia	5 (9.4)	0	5 (9.4)	0.04
Septic Shock	10 (17)	1 (2)	9 (15)	0.03

DISCUSSION:

Current study concludes that out of 125 patients, 62 patients did not survive and had died in hospital. Median age of the participants was 59 (27,80) years overall and mean age of the participants who survives was 50.8 year and in non-survivors 61.7 years. Contrary to the current study, a study conducted in China on 78 patient of corona virus disease concludes that 11 (14.1%) had a worse outcome and 67 (85.9%) have survived[11]. Median age of the patients was 38 (33,57) years. The difference in outcome may be due to population age differences. Current study also concludes that older age is associated factor for worse outcome of corona virus disease. Similarly a study conducted on risk factor for mortality in COVID-19 also concludes that older age is risk factor for mortality in coronavirus disease[12]. In this study majority (93%) of the participant presented with sign and symptoms. Most reported were fever, cough, and dyspnea with percentage of 83, 80, and 79 respectively. There was no statistical difference in sign and symptoms of discharged and died group. A systemic review also concludes that fever 88.7%, cough 57.6%, and dyspnea 45.6% was presenting complaints of majority patient[3]. This study results shows that 53% patient presented with comorbidity in which 15% patients were discharged from hospital and 35% died in hospital. Which show comorbid patient had significant risk of in hospital death. In all comorbid patient 37% had diabetes, and 28% had hypertension history. Multiple studies concludes that comorbidity has greater risk for mortality as compared patients with no comorbidity[8, 12-16]. Changes in laboratory findings also noted in both groups. Increased white blood cells count, increased neutrophils, decreased lymphocytes, increased SGPT, deranged blood urea, serum creatinine, increased LDH, increased CRP, increased D-Dimer, and hypersensitive troponin I level noted in the study. In addition, it is concluded that increased white blood cells count, decreased lymphocytes, increased blood urea, increased serum creatinine level, increased D-Dimer level, and hypersensitive troponin I level are significantly associated with in hospital mortality in coronavirus disease patients. Similarly other studies also concludes the above had significant relation with in hospital mortality[3, 17-20]. The entire study participant received multiple drug treatment such as single antibiotics, multiple antibiotics, steroids, and anticoagulants but no treatment found to be effective in coronavirus disease in the current study. Complication rate reported in current study was 46.3% and was significantly high died patients. 14 patients presented with acute cardiac injury in the current study all patient had died in hospital. A single centered study from China also reports that 10 patients died out of 13 with hypersensitive troponin I reactive[20]. 34 (51%) patients presented with complication of acute kidney injury in which 4 patients discharged and 30 patients died in hospital. A study conducted in USA reports 36.6% patients develops acute kidney injury and had a greater risk for mortality in coronavirus disease[10].

CONCLUSION:

In older age, comorbidity, high white blood cells count, decreased lymphocytes count, and deranged laboratory findings such as increased blood urea, serum creatinine, increased D-Dimer level are associated factor for mortality in coronavirus diseased patients. No such treatment in the current study was helpful.

CONFLICT OF INTEREST: None

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CONTRIBUTORS

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