ORIGINAL ARTICLE

Analysis of COVID-19 Mortality in Allied Hospitals of Rawalpindi Medical University Pakistan

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ABSTRACT

Background and Objective: COVID-19 has emerged as a serious threat to the public health. It has been declared as Public Health Emergency of International Concern (PHEIC) because of morbidity and mortality associated with it all over the world. The objective of the present study was to analyze COVID-19 related fatalities in terms of comorbidity, length of hospital stays and critical illness in Allied hospitals of Rawalpindi Medical University.

Methods: A retrospective hospital data-based research was carried out on n = 25 fatalities registered in three Allied hospitals (Rawalpindi Institute of Urology & Transplantation, Benazir Bhutto Hospital and Holy Family Hospital) of Rawalpindi Medical University. The data included age, gender, date of admission and death, severity of illness, comorbidity, oxygen administration or ventilator support and was gathered through consecutive sampling. The data was analyzed by using SPSS version 25.0. Fisher's Exact test was applied to determine statistical significance of association between comorbidity and need for ventilation. Statistical significance of association between length of hospital stay and comorbidity was verified by independent sample t-test.

Results: Of the total n = 25 COVID-19 related fatalities in Allied hospitals, 76% were males. The mean age of study subjects was 55.9 ± 15.28 years. The greatest number of overall deaths was among 51 – 70 years old patients. About 44% fatalities had comorbid states with hypertension and diabetes constituting the highest (45.4%) proportion. Comorbidity had statistically significant association ($P < 0.02$) with need of ventilators in critically ill patients while length of hospital stays depicted insignificant association with comorbidity ($P > 0.80$).

Conclusion: People above the age of 50 years are more likely to die due to COVID-19. Comorbid states of hypertension and diabetes should be carefully managed to avoid grave consequences.

KEYWORDS: COVID-19, Comorbidity, Critical illness, Ventilator, Hospital stay, Hypertension, Diabetes.

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INTRODUCTION

COVID-19 has emerged as a serious threat to the public health. Coronavirus infection is declared as Public Health Emergency of International Concern (PHEIC) due to exponential growth of consequential morbidity and mortality all over the world.[1] Victims of this infection usually experience mild to moderate respiratory illness which in extreme cases especially among immune-deficient and aged population coupled with comorbidity may escort to severe respiratory distress and poor health outcome.[2] Hence practicing respiratory etiquettes is of paramount significance for safety from this irresistible sickness.[3]

Local transmission of Coronavirus has eventually expanded to all the six World Health Organization (WHO) regions of the world.[4] Apart from health impact, change in lifestyle and economic recession are also attributed to this deadly havoc.[5] Early identification of symptoms and prompt supportive or intensive care can lessen the progression of COVID-19 to critical illness.[6] Strategic planners and public health specialists should ensure impediment between onset of symptoms and grave outcome by implementation of appropriate precautionary measures and information dissemination in the good will of public.[7]

Emergence of COVID-19 as a public health challenge globally is primarily attributed to its contagiousness.[8] Although maximum COVID-19 cases were reported in America followed by Italy and Spain but Asian countries including Pakistan has also reported cases that are escalating in number with worsening of current scenario.[9,10] Despite the limited governmental assets to tackle with this emergency, quarantine services and isolation ward in hospitals with proper Standard Operating Procedures (SOPs) are made available in each province of Pakistan.[11,12] Death rate in Pakistan due to Coronavirus infection is mounting day by day.[13] This issue is quite alarming and concerned health authorities should take indispensable steps for prompt management of the situation.

The present study was mainly intended to determine the key attributes of COVID-19 associated mortality reported in Allied Hospitals of Rawalpindi Medical University. Therefore, data pertinent to COVID-19 mortality was retrieved through proper channel from 3 Allied Hospitals of Rawalpindi Medical University namely Rawalpindi Institute of Urology & Transplantation (RIUT), Holy Family Hospital (HFH) and Benazir Bhutto Hospital (BBH). The analysis of COVID-19 deaths would be of great importance in ruling the risk factors contributing to death apart from other associated health managerial dynamics.

METHODS

A retrospective hospital data-based research was done on n = 25 fatalities reported in RIUT, BBH and HFH teaching hospitals of Rawalpindi Medical University Pakistan after getting the approval from Institutional Ethical Committee. The data included demographics, length of hospital stay, comorbidity and ventilator support to the fatalities and was gathered by consecutive sampling.

STATISTICAL ANALYSIS

Data was analyzed by using Statistical Package for Social Sciences (SPSS version 25.0). Frequency and percentage was calculated for gender. Mean ± SD was calculated for continuous variables like age and length of hospital stay. Mean duration of hospital stay among fatalities with and without comorbidity was compared by independent sample t-test. Statistical significance of association between comorbidity and ventilator support among critically ill was determined by Fisher's exact test.

RESULTS

Of the total n = 25 COVID-19 deaths enrolled in this study, 76% were males and 24% were females. Mean age of died people was 55.9 ± 15.28 years. Mostly, (60%) of the study subjects were admitted in Benazir Bhutto Hospital (BBH), followed by (28%) in Rawalpindi Institute of Urology & Transplantation (RIU&T) and a few (12%) in Holy Family Hospital (HFH) (Fig:1).

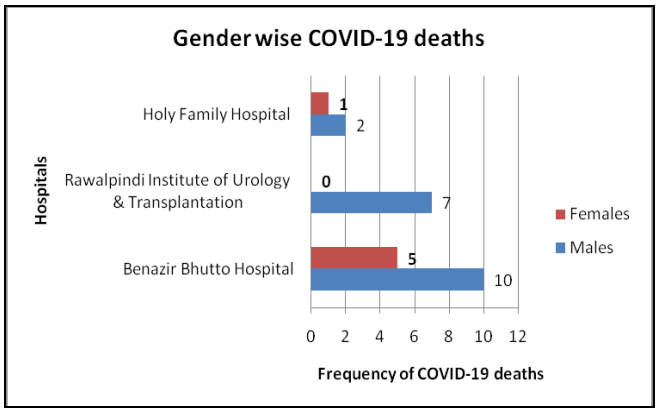

Fig.1: Gender based distribution of COVID-19 deaths in Hospitals affiliated with RMU (n = 25).

Mean duration of hospital stay from admission till death was determined to be 5.95 ± 4.22 days. Highest fatality from COVID-19 was reported among males with 51 – 70 years of age and females 41 – 50 years old (Fig: 2).

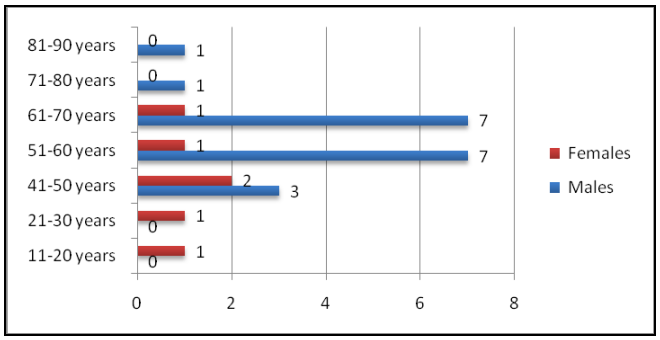

Fig.2: Gender wise COVID-19 fatalities in different age groups (n = 25).

Among n = 25 COVID-19 deaths, (44%) patients had diverse comorbid states with hypertension and diabetes constituting the highest frequency (45.4%) followed by (18.2%) chronic kidney disease (CKD), (9.1%) ischemic heart disease (IHD), (9.1%) chronic liver disease (CLD) and (9.1%) chronic obstructive pulmonary disease (COPD). There were patients having one or more than one comorbid states (Fig:3).

Comorbidity was determined to have statistically significant association (P < 0.02) with need for ventilators among COVID-19 fatalities who were critically ill on admission to hospital (Table-1).

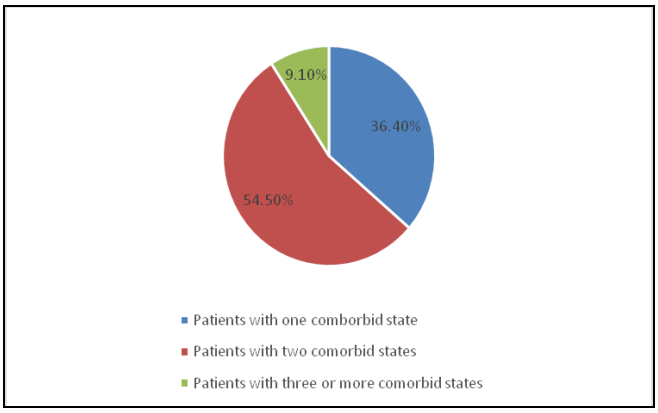

Fig.3: Frequency of distribution of co-morbid states.

Table-1: Statistical association of comorbidity with critical illness/ventilator obligation among COVID-19 fatalities.

	Type of Illness on Admission		Total	Fisher's Exact Test
	Critically Ill (on ventilators)	Trivially Ill (on Oxygen supply)		
Yes	11	0	11	(P < 0.02)
No	08	06	14	
	19	06	25	

Length of hospitalization among COVID-19 fatalities with comorbidity (8±3.85 days) and without any chronic condition (5±8.9days) revealed insignificant statistical association of comorbidity with hospitalization (P>0.80).

DISCUSSION

History reminds various pandemics with long term devastating effects and social implications. World population is again confronted with a tiresome challenge amid COVID-19 pandemic that has eventually encompassed all regions of the world. Invisibility and fatality of novel Coronavirus (COVID-19) has vanished many lives form the world.[14]

Mean age of COVID-19 fatalities in our study is 55.9 ± 15.28 years. About (76%) and (24%) deaths were charted among males and females respectively. About (73.7%) deaths were registered among 51 – 70 years old males and (33.3%) deaths among 41 – 50 years old females amid COVID-19 pandemic in Pakistan. On reviewing COVID-19 death record of Italy, mean age of fatalities was 79.5 ± 8.1 years with males constituting 70% of the

death burden. Contrary to present study, most (52.3%) of the deaths were eminent among Italian population ≥ 80 years. On scrutinizing the demographic characteristics of Italian population, it became evident that (23%) of people there are above 65 years of age.[15] The higher COVID-19 related fatality among 80 years older people might be attributed to more elders there as compared to youngsters. This aspect coupled with increased vulnerability of elders to Coronavirus infection might contribute to escalated death toll among old citizens. On the other hand, 53.09% of Pakistani population is 15 – 63 years old and only 3.5% people constitute economically dependent population ≥ 65 years.[16] The demographics of both countries are much supportive of age differences pertinent to COVID-19 related deaths of two countries. Highest fatalities among Chinese citizens were found among 60 – 79 years old population.[17]Chinese demographics revealed that about 48% residents are 25 – 54 years old and only 11.3% of citizens are ≥ 65 years old.[18] One of the probable reasons for country wise diversity in COVID-19 related case fatality is confinement of RT-PCR testing for people presenting with more severe symptoms and requiring hospitalization.[15] This facet necessitates in depth research to validate the cause of age based differences in case fatalities of various regions.

Out of n = 25 fatalities in current study, about (44%) had various comorbid states with hypertension and diabetes comprising (45.4%) of pre-existing diseases. Chronic kidney disease amounted to 18.2% while each of IHD, CLD and COPD constituted 9.1% of comorbidity. Similarly, Italian population revealed 35.5% of people who died of COVID-19 had diabetes. However, 30%, 20.3% and 9.6% of them presented with IHD, cancer and stroke respectively.[15] As diabetes seems to have some association death in patients with COVID-19, so this aspect should be explored deeply to determine the plausible relationship. It has been observed in current study that 56% deaths did not have any pre-existing disease while only 0.8% of Italian fatalities were free from any chronic disease. As highest proportion of Coronavirus infected among Italians were ≥ 80 years, this seems to be an underlying cause for greater comorbidity among victims.[15] Similarly another research among Chinese patients depicted old age as one of the eminent risk factors contributing to poor prognosis of COVID-19 victims. Mean age of died patients was 69 years (95%CI 63-75). In addition, hypertension was the most frequent (48%) comorbidity among non-survivors followed by diabetes (31%) and coronary heart diseases (24%).[19] Hypertension and diabetes appear to account for poor health outcome among COVID-19 sufferers. COVID-19 cases with these pre-existing diseases should be prioritized for prompt healthcare management in order to shun poor outcome.

CONCLUSION

Older male people with comorbidity are highly vulnerable to Coronavirus infection. Further research on from diverse regions of the world would facilitate in drawing the true picture of this problem.

LIMITATIONS OF STUDY

Limitations of present study is the small sample size. A series of future studies are recommended with larger sample size to analyze mortality in patients with COVID-19 and its correlation with other comorbidities.

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CONFLICT OF INTEREST

None to declare.

FINANCIAL DISCLOSURE

None to disclose.

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Author's Contribution

SZ: Conception and design of study, data interpretation.

RS: Drafting and final approval of the version to be published.

MU: Acquisition, analysis and interpretation of data.

QA: Acquisition of data and drafting.

MOA: Critical revision of the manuscript for intellectual content.

MK: Data interpretation, drafting.

MMK: Final approval of manuscript.