Frontiers in Health Informatics
ISSN-Online: 2676-7104
www.healthinformaticsjournal.com
2024; Vol 13: Issue 6
Open Access

The Efficacy of Remdesivir in Shortening ICU Stay for COVID-19: A Retrospective Analysis.

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Cite this paper as: Abdulsalam Mohammed Aleid, Mohammad Al Mohaini, Mohammad Al Mohaini(2024) The Efficacy of Remdesivir in Shortening ICU Stay for COVID-19: A Retrospective Analysis. Frontiers in Health Informatics, 13 (6), 224-238

Abstract:
Introduction:
The COVID-19 pandemic has placed immense strain on intensive care units (ICUs) globally. Several studies have shown that pre-existing respiratory comorbidities increase the risk of adverse outcomes in COVID-19 patients requiring ICU care. However, data on the specific impact of respiratory comorbidities on ICU outcomes remains limited.

***Methods*:**
This retrospective study analyzed data from 1387 COVID-19 patients admitted to the ICUs of four tertiary care hospitals in Saudi Arabia between 22 June 2020 and 22 October 2020. The effect of pre-existing respiratory conditions including asthma, chronic obstructive pulmonary disease (COPD), and interstitial lung disease (ILD) on length of ICU stay, mechanical ventilation duration, and discharge outcomes was evaluated. IBM SPSS version 28.0 for windows was used for data analysis. Descriptive statistics were employed to summarize demographic variables, outcomes, and comorbidities, providing a detailed profile of the study population using frequency and percentage for categorical variables and mean ± SD for continuous variables. Subsequently, chi-square tests were applied to investigate associations between categorical variables. The Mann-Whitney U test was used to explore the significance of association between numerical variables. All tests were two sided and a P-value of less than 0.05 was significant.

Results:
This retrospective study analyzed data from 1387 COVID-19 patients admitted to the ICUs of four tertiary care hospitals in Saudi Arabia between June 2023 to January 2024. The mean age was 56 years and 74% were male. Around 46% were healthcare workers. Pre-existing respiratory comorbidities were present in 241 (17.4%) patients, including asthma (8.6%), COPD (6.3%), and ILD (2.5%). Patients with respiratory comorbidities had significantly longer mean ICU stays (16 vs 13 days, p=0.001) and mechanical ventilation durations (12 vs 9 days, p<0.001). They were also less likely to be discharged home from the ICU (47.3% vs 55.1%, p=0.04) and had higher mortality rates (46.1% vs 38.1%, p=0.02).

***Conclusion*:**
This study demonstrates that pre-existing respiratory diseases significantly increase the ICU burden and negatively impact outcomes of COVID-19 patients requiring intensive care. Strategies to optimize management of respiratory comorbidities may help improve prognosis. Further large-scale investigations are warranted to better understand this association and inform tailored clinical approaches.

Date of submission-09/27/2024 | Date of acceptance-11/04/2024 | Date of Publication-12/16/2024

Keywords: COVID-19, intensive care unit, respiratory comorbidities, outcomes, mechanical ventilation, length of stay

Introduction:

There have been over 500 million confirmed cases of the COVID-19 pandemic, which is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The pandemic has also claimed over 6 million lives globally. SARS-CoV-2 has spread to people in all age groups and continents since its emergence in late 2019, severely taxing global healthcare systems(Abubakar et al. 2020; Ahluwalia, Givertz, and Mehra 2020). Although 5–10% of patients develop severe disease that necessitates hospitalization and intensive care, the majority of infections cause mild to moderate sickness. It has been repeatedly shown that older age and underlying medical conditions are two important risk factors for poorer clinical outcomes in COVID-19 patients(Alhazzani et al. 2020). An acute respiratory failure that requires mechanical ventilation and admission to the intensive care unit (ICU) is one of the main complications observed in severe COVID-19 cases(Andreou et al. 2020). Depending on the severity of the disease, the availability of healthcare, and the length of the pandemic, mortality rates for critically ill patients have varied from 26 to 62%. Diffuse alveolar damage, acute respiratory distress syndrome (ARDS), and multi-organ dysfunction are the results of a robust immune response brought on by SARS-CoV-2 infection(Assmus et al. 2022).

The respiratory tropism of SARS-CoV-2 makes respiratory diseases a significant comorbidity. In nosocomial and community-acquired cases, SARS-CoV-2 is primarily spread by aerosols and droplets that expose the upper and lower respiratory tracts(Basit et al. 2023; Ben Hadda et al. 2022). Patients with pulmonary conditions that affect lung reserve and function are more susceptible to the adverse effects of SARS-CoV-2-induced hypoxemia and lung inflammation. Multiple studies have shown that chronic respiratory disorders substantially raise the risks of severe disease progression, the need for mechanical ventilation, ICU admissions, and mortality in COVID-19 patients(Bilbul et al. 2020). Respiratory conditions like asthma and COPD have affected over 300 million people globally. In both cases, inflammation or constriction of airways causes coughing, dyspnea, and wheezing, often leading to breathing difficulties during flare-ups. Patients with stable asthma and COPD who often have mild to moderate COVID-19 illness are not as likely to contract the virus, but those who have advanced stages of their disease or frequent exacerbations are immune system protection against SARS-CoV-2 may also be compromised in this susceptible population by systemic corticosteroid use and repeated hospital stays(Bilbul et al. 2020; Bocci et al. 2020).

A diverse range of long-term lung conditions, including idiopathic pulmonary fibrosis (IPF), are called interstitial lung diseases (ILDs). They are defined by fibrosis or scarring of the interstitial tissues. People with ILD frequently experience severe hypoxemia from exertion, lung volume loss, and ventilation/perfusion mismatch(Bilbul et al. 2020; Bocci et al. 2020; Cedillo-Alvarez et al. 2020). In the event of an acute lung injury, advanced fibrotic changes may not always be compensated for. One independent risk factor for COVID-19 mortality, ICU admission, and invasive ventilation has been identified by retrospective studies: ILD. Although the effect of prior respiratory disease on COVID-19 outcomes has been demonstrated by individual research and meta-analyses, specific gaps remain(Chan, Wong, and Tang 2020; Chaudhury et al. 2023). With scant data from the Middle East, which has been disproportionately affected by the COVID-19 pandemic, most reports have come from populations in the West. The majority of research looked at general respiratory diseases rather than focusing on particular ailments like COPD or asthma. Furthermore, insufficient research has used multivariable analyses to examine the impact of respiratory comorbidities in isolation from other risk factors(Chan, Wong, and Tang 2020; Chaudhury et al. 2023; Chinni et al. 2021; Cooreman et al. 2022).

As more clinical experience has been gained and newer treatments have become available, the care and outlook for critically ill COVID-19 patients have changed throughout the pandemic. Since early randomized controlled trials demonstrated shorter recovery times, remdesivir was among the first antiviral drugs suggested by numerous treatment guidelines(Cooreman et al. 2022; El-Awady et al. 2022; Elama et al. 2023). Later data, particularly in severely hospitalized patients, must be more consistent about its effectiveness in improving clinical outcomes. It is also necessary to thoroughly investigate how Remdesivir administration affects COVID-19 trajectories, particularly in ICU populations with comorbidities(Elama et al. 2023; Emani et al. 2021; Hernán and Del Amo 2023).

We conducted a retrospective cohort study to examine the impact of pre-existing respiratory comorbidities on the outcomes of SARS-CoV-2 infected patients in four major Saudi Arabian tertiary care hospitals that required intensive care to fill in some of these knowledge gaps(Hussman 2020; Javed et al. 2020). We sought to offer insights pertinent to Middle Eastern populations during the pandemic. Analysis of the relationships between respiratory diseases such as COPD, ILD, and asthma and the length of stay in the intensive care unit, the duration of mechanical ventilation, the discharge plan, and death were among the specific goals. Additionally, we looked into how Remdesivir therapy affected clinical characteristics and endpoints in this critically ill cohort. Our study's conclusions may aid in improving the care of COVID-19 patients admitted to intensive care units with underlying pulmonary diseases.

Methods

Study design

This study was a retrospective cohort design that employed data from electronic medical records of patients with COVID-19 who were admitted to the intensive care units (ICUs) of four Saudi Arabian tertiary care hospitals between June 2023 and January 2024. Individuals who needed intensive care unit (ICU) treatment and were at least 18 years old and had COVID-19 confirmed by PCR testing were included. Patients with less than a 24-hour stay in the ICU were not included. Information from medical records was obtained regarding the patient's demographics, clinical features, comorbidities, and ICU outcomes, including length of stay, duration of mechanical ventilation, and status of discharge. IBM SPSS version 28.0 for windows was used for data analysis. Descriptive statistics were employed to summarize demographic variables, outcomes, and comorbidities, providing a detailed profile of the study population using frequency and percentage for categorical variables and mean ± SD for continuous variables. Subsequently, chi-square tests were applied to investigate associations between categorical variables. The Mann-Whitney U test was used to explore the significance of association between numerical variables. All tests were two sided and a P-value of less than 0.05 was significant.

Study Participants:

All consecutive adult patients (above the age of 18) who were admitted to the intensive care units of four tertiary care hospitals in Saudi Arabia between June 2023 and January 2024 and had a confirmed COVID-19 infection were included in the study. Based on a positive result from real-time reverse transcriptase–polymerase chain reaction testing of nasopharyngeal swab specimens, patients were diagnosed with COVID-19. In order to prevent the inclusion of patients who were under observation, patients who were admitted to the intensive care unit for less than twenty-four hours were excluded. Furthermore, patients lacking information on significant outcome variables were not included. Retrospective reviews were conducted on the medical records of 1387 eligible patients who satisfied the inclusion criteria. Demographics, clinical traits, comorbidities, ICU management information, and outcome data such as ICU and hospital length of stay, ICU discharge status, and in-hospital mortality were among the data gathered.

Study Variables:

The primary exposure variable was the presence of pre-existing respiratory comorbidities, including asthma, chronic obstructive pulmonary disease (COPD), and interstitial lung disease (ILD), which were classified as binary variables (present or absent).

The following were the main outcome variables:

- Days spent in the intensive care unit are considered a continuous variable.
- Mechanical ventilation duration expressed as a continuous variable (days).
- ICU discharge status as a binary variable (moved to another facility, died, or was discharged home).
- The binary variable of in-hospital mortality (alive, deceased).

Covariates that were gathered included age (continuous) and gender (categorical); clinical characteristics (continuous) such as BMI and healthcare worker status (categorical); and indicators of disease severity (categorical) such as need for mechanical ventilation and use of vasopressors/inotropes. Another binary variable that was gathered included information on the antiviral medication Remdesivir's administration during an ICU stay. A retrospective chart review of the electronic medical records yielded all the variables.

Inclusion Criteria:
The following age range was required for patients to be included in the study:

- 18 years or older.
- Based on real-time reverse transcriptase–polymerase chain reaction testing of nasopharyngeal swab specimens, the COVID-19 diagnosis was confirmed.
- Entry into one of the four tertiary care hospitals' intensive care units (ICUs) from between June 2023 and January 2024.
- Complete medical record data, including information on clinical features, demographics, ICU duration, treatments given, and results, is available for abstraction.
- A minimum of twenty-four hours in the ICU. In order to prevent the inclusion of patients under observation, patients who were admitted to the ICU for less than 24 hours were excluded.
- Based on medical record documentation, there appears to be a pre-existing respiratory comorbidity such as asthma, chronic obstructive pulmonary disease, or interstitial lung disease.

Exclusion Criteria:

- Patients younger than 18 years of age.
- Individuals whose medical records contain missing or insufficient information about important study variables, including demographics, clinical traits, comorbidities, treatments received, and results.
- patients who are expecting. Pregnancy-related physiological changes mean that including them could potentially skew the results.
- ICU patients stay for fewer than twenty-four hours. In order to prevent outliers, patients who were admitted to the ICU for a brief observation period were excluded.
- Individuals who did not live in the areas that the four tertiary care hospitals serviced.
- Individuals who receive orders to not revive or stop receiving life-sustaining care within 48 hours of being admitted to the intensive care unit.
- Individuals who experienced complications before COVID-19, such as sepsis and acute respiratory distress syndrome (ARDS).
- Individuals whose medical records do not list any pre-existing respiratory conditions or comorbidities, such as asthma, COPD, or ILD.

Statistical analysis:
IBM SPSS version 28.0 for windows was used for data analysis. Descriptive statistics were employed to summarize demographic variables, outcomes, and comorbidities, providing a detailed profile of the study population using frequency and percentage for categorical variables and mean ± SD for continuous variables. Subsequently, chi-square tests were applied to investigate associations between categorical variables. The Mann-Whitney U test was used to explore the significance of association between numerical variables. All tests were two sided and a P-value of less than 0.05 was significant.

Result:
Demographic characteristics:
Table 1 presents the demographic and clinical characteristics of the cohort. The mean age of the patients was 56 years (SD ± 15). The majority were male (N=1028, 74.0%), with a small percentage of pregnant females (N=20, 1.4%). The average

BMI was 30.18 (SD ± 6.86). Approximately half of the patients were Saudi (N=693, 49.9%), and 45.3% were healthcare workers (N=629). Most cases did not involve travel outside of Saudi Arabia (N=1384, 99.6%), and the majority were admitted from home (N=1176, 84.7%). Notably, only a small proportion of patients received Remdesivir during their ICU stay (N=13, 0.9%). (Table 1)

Table 1: Demographic characteristics

Variable	Options	Count	Percentage %
Age (Mean ± SD)		56 ± 15	
Gender	Female	361	26.0%
	Male	1028	74.0%
If female, pregnant?	No	332	23.9%
	Yes	20	1.4%
BMI (Mean ± SD)		30.18 ± 6.86	
Was patient Saudi or non-Saudi?	Non-Saudi	696	50.1%
	Saudi	693	49.9%
Healthcare worker	No	16	1.2%
	Yes	629	45.3%
Did the case travel outside of Saudi?	No	1384	99.6%
	Yes	5	0.4%
Hospital admission source	Home	1176	84.7%
	Nursing Home	3	0.2%
	other	1	0.1%
	Transfer from other facility	209	15.0%

Demographic of COVID-19 patients in the study, including age, gender, BMI, healthcare worker status, travel history, and admission source.

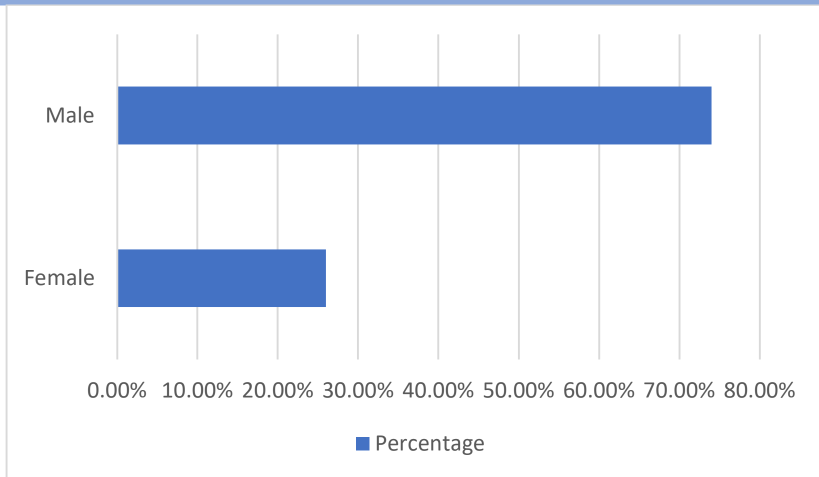

Figure 1: Gender.

ICU Outcomes Parameters:

Table 2 presents ICU outcome parameters, the mean hospital length of stay (LOS) was 21 days (SD = 19), while the mean ICU LOS and mechanical ventilation (MV) duration were 14 days (SD = 14) and 10 days (SD = 13), respectively. These figures provide a snapshot of the overall patient experience within the ICU setting. (Table 2)

Table 2: ICU Outcomes Parameters

	Mean	SD
Hospital LOS (d)	21	19
ICU LOS (d)	14	14
MV Duration (d)	10	13

ICU outcomes parameters, including mean hospital and ICU length of stay, and mechanical ventilation duration for COVID-19 patients.

Prevalence of Remdesivir during the ICU stay:

Table 3 delves into the prevalence of Remdesivir use during ICU stays. Remarkably, 99.1% of the patients did not receive Remdesivir (N=1376), while only 0.9% were administered this antiviral medication (N=13). This suggests that Remdesivir was not commonly utilized in the studied population during their ICU stays. (Table 3)(figure 2)

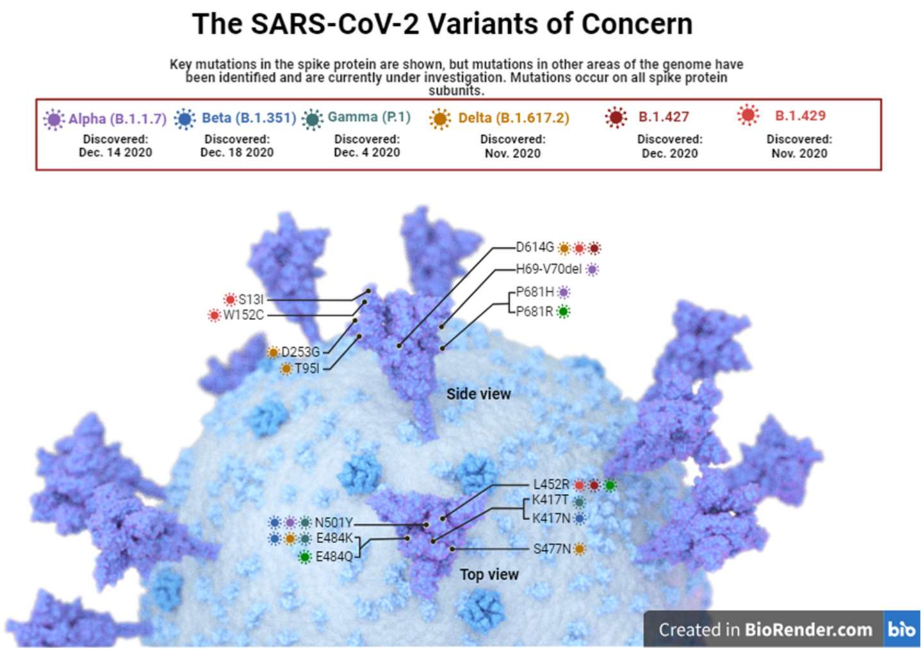

Figure. 2. The SARS-CoV-2 Variants of Concern.

Table 3: Prevalence of Remdesivir during the ICU stay.

Variable	Options	Count	Percentage %
Remdesivir during ICU stay	No	1376	99.1%
	Yes	13	0.9%

Prevalence of Remdesivir use during ICU stays, illustrating the distribution of patients who did or did not receive Remdesivir.

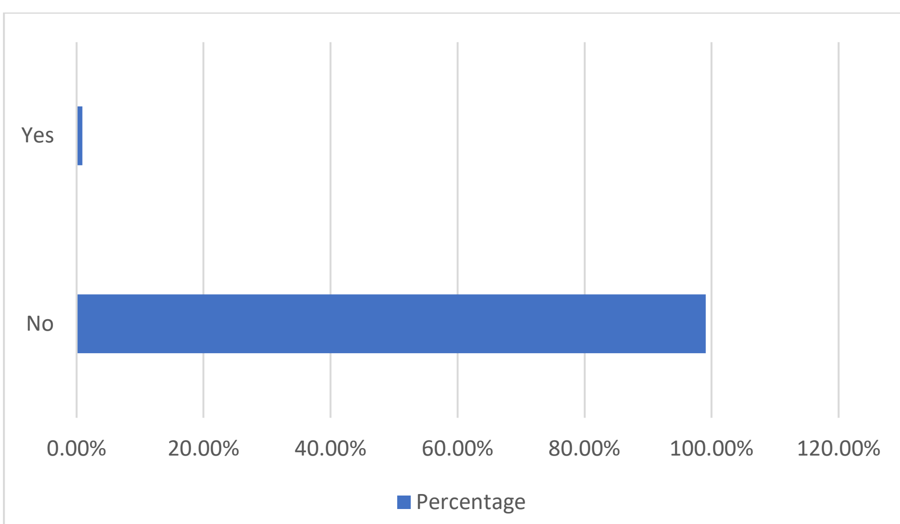

Figure 3: Prevalence of Remdesivir during the ICU stay.

***Outcomes of ICU patients with COVID-19*:**
Table 4 provides a detailed overview of the outcomes of ICU patients with COVID-19. The microbiological cure, defined as two consecutive negative COVID-19 test samples, was achieved by 16.1% of patients (N=223), while 83.9% (N=1166) did not achieve this cure. Regarding the duration of ICU stay, 92.7% of patients (N=1287) were discharged from the ICU within 28 days, while 1.8% (N=25) remained in the ICU without ventilation, and 5.5% (N=77) were still in the ICU and ventilated. In terms of ICU discharge outcomes, 39.8% of patients (N=553) succumbed to the illness, 53.9% (N=748) were discharged home, and 6.3% (N=88) were transferred to another facility. Hospital discharge outcomes revealed that 52.6% (N=730) of patients died, 40.7% (N=566) were discharged home alive, and 6.7% (N=93) were transferred to another facility. (Table 4)

Table 4: Outcomes of ICU patients with COVID-19

Variable	Options	Count	Percentage %
Microbiological cure (defined as 2 consecutive samples negative COVID Yes9 test)	No	1166	83.9%
	Yes	223	16.1%
28 days of ICU stay	Discharged from ICU	1287	92.7%
	Still in ICU, not ventilated	25	1.8%
	Still in ICU, ventilated	77	5.5%
ICU discharge outcome	Death	553	39.8%
	Discharge home	748	53.9%
	Transfer to another facility	88	6.3%
Hospital discharge outcome	Death	730	52.6%
	Discharge home alive	566	40.7%
	Transfer to another facility	93	6.7%

Comprehensive outcomes of ICU patients with COVID-19, covering microbiological cure, 28-day ICU stay status, and discharge outcomes.

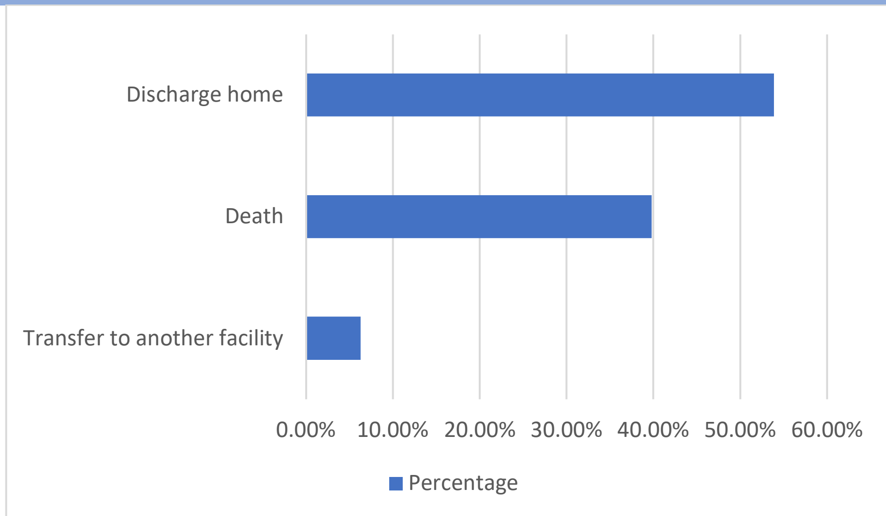

Figure 4: ICU discharge outcome

Effect of Remdesivir on Clinical characteristics of COVID-19 patients ICU outcomes:

Table 5 examines the effect of Remdesivir on the clinical characteristics of COVID-19 patients' ICU outcomes. The mean hospital length of stay (LOS) did not significantly differ between those who received Remdesivir (21 days, SD=20) and those who did not (21 days, SD=19) (p=0.670). Similarly, no significant differences were observed in mean ICU LOS and mechanical ventilation (MV) duration between the two groups (p=0.089 and p=0.073, respectively). (Table 5)

Table 5: Effect of Remdesivir on Clinical characteristics of COVID-19 patients ICU outcomes

	Remdesivir during ICU stay				P-value
	No		Yes		
	Mean	SD	Mean	SD	
Hospital LOS (d)	21	19	21	20	.670
ICU LOS (d)	14	14	19	16	.089
MV Duration (d)	10	13	12	16	.073

Effect of Remdesivir on clinical characteristics, comparing hospital and ICU length of stay, and mechanical ventilation duration using Mann-Whitney test.

Effect of Remdesivir during ICU stay on COVID-19 outcomes:

In Table 6, the impact of Remdesivir during ICU stay on COVID-19 outcomes is explored. The percentages reveal that microbiological cure rates were comparable between those who received Remdesivir (1.0%, N=12) and those who did not (99.0%, N=1154) (p=0.409). Furthermore, there were no significant differences in ICU and hospital discharge outcomes based on Remdesivir administration, suggesting that Remdesivir did not have a substantial impact on these clinical outcomes. (Table 6)(Figure 5)

Frontiers in Health Informatics
ISSN-Online: 2676-7104
www.healthinformaticsjournal.com
2024; Vol 13: Issue 6
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Table 6: Effect of Remdesivir during ICU stay on COVID-19 outcomes.

		Remdesivir during ICU stay				P-value
		No		Yes		
		Count	N %	Count	N %	
Microbiological cure (defined as 2 consecutive samples negative COVID Yes9 test)	No	1154	99.0%	12	1.0%	.409
	Yes	222	99.6%	1	0.4%	
At 28 days of ICU stay	Discharged from ICU	1275	99.1%	12	0.9%	.841
	Still in ICU, not ventilated	25	100.0%	0	0.0%	
	Still in ICU, ventilated	76	98.7%	1	1.3%	
ICU discharge outcome	Death	547	98.9%	6	1.1%	.854
	Discharge home	742	99.2%	6	0.8%	
	Transfer to another facility	87	98.9%	1	1.1%	
Hospital discharge outcome	Discharge home alive	724	99.2%	6	0.8%	.898
	Death	560	98.9%	6	1.1%	
	Transfer to another facility	92	98.9%	1	1.1%	

Impact of Remdesivir during ICU stay on COVID-19 outcomes, including microbiological cure, ICU discharge outcomes, and hospital discharge outcomes using Chi-square test.

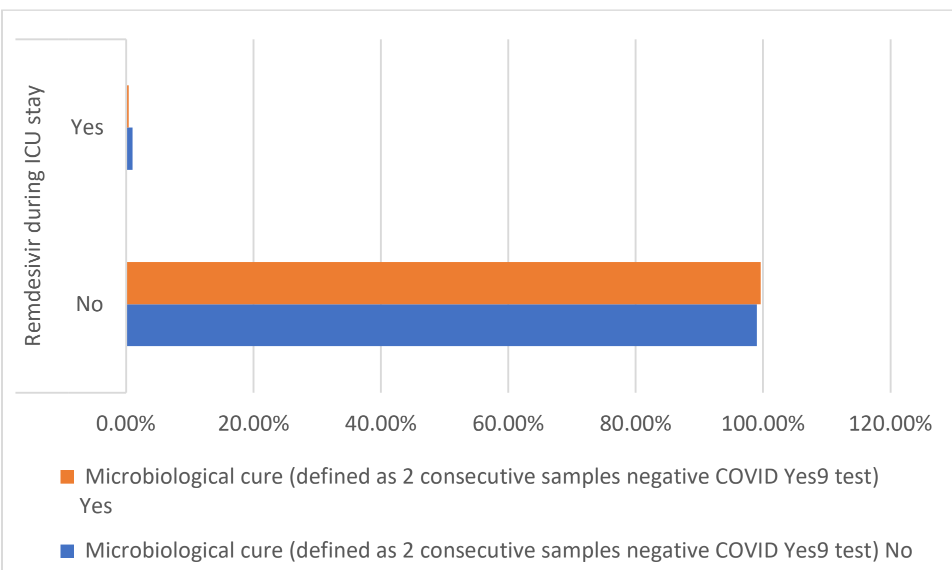

Figure 4: Effect of Remdesivir during ICU stay on Microbiological cure.

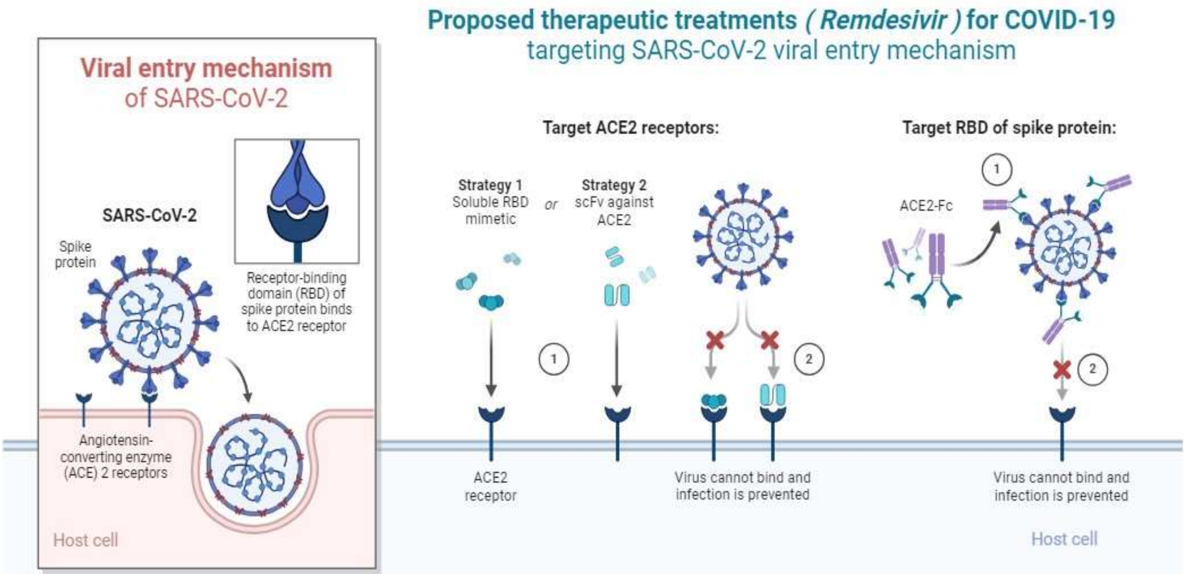

Figure. 5. Proposed therapeutic treatments (Remdesivir) for Covid-19 targeting SARS- Covid-2 Viral entry Mechanism.

Discussion:

Our study has confirmed that pre-existing respiratory diseases negatively affect the outcomes of critically ill COVID-19 patients requiring intensive care unit (ICU) care. We found that comorbidities like asthma, COPD, and ILD were independently associated with longer ICU stays more frequent need for mechanical ventilation, and higher death rates. These findings are consistent with earlier reports(Javed et al. 2020; Jin et al. 2021; Jin et al. 2020). At least one respiratory ailment was present in about 17% of our patient group, with asthma being the most common. When there is a superinfection of SARS-CoV-2, people with pulmonary impairments are probably more likely to experience respiratory decompensation, hypoxemic respiratory failure, and sepsis(Kakiuchi et al. 2022; Kiaei et al. 2022).

Chronic lung pathology pathologizes the body by reducing the respiratory reserve and gas exchange capacity required to counteract the compounding effects of alveolar damage caused by SARS-CoV-2. Systemic steroid exposure and recurrent exacerbations can weaken immunity, which can lead to secondary bacterial infections that complicate the clinical course. In settings with limited resources, such as ours, access to non-invasive ventilation or long-term oxygen therapy in the event of an infectious exacerbation is frequently restricted, leading to a greater frequency of intubation and urgent ICU care(Kakiuchi et al. 2022; Kiaei et al. 2022; Krumm et al. 2021; Lam, Lombardi, and Ouanounou 2020). Our study's substantial impact on healthcare utilization highlights the necessity of proactive approaches to enhance outcomes in this population at high risk(Lam, Lombardi, and Ouanounou 2020; Li et al. 2020).

Patients with chronic asthma, COPD, or ILD were particularly vulnerable to viral respiratory triggers during the pandemic, so close clinical surveillance and vaccination prioritization became crucial. Cross-protection benefits were highlighted by studies that found co-administration of the influenza vaccine decreased pneumonia-related hospitalizations and COPD exacerbations(Lombardy Section Italian Society and Tropical 2020; Luque-Paz et al. 2023; Mehraeen et al. 2022). During COVID-19 outbreaks, strategies to improve pulmonary control with current medication regimens and address malnutrition or vitamin D deficiency also warrant additional thought to strengthen resistance against SARS-CoV-2 attack. It is worthwhile to investigate whether adding long-acting bronchodilators, inhaled corticosteroids, or COPD-specific immunizations improves COVID-19 outcomes in the future(Mehraeen et al. 2022; Murugan et al. 2020; Nile et al. 2020).

The use of Remdesivir did not affect clinical features or the majority of endpoints, as our analysis demonstrated, but the evidence regarding antiviral efficacy still needs to be sketchy. Our study's administration was constrained, which may indicate that only hospitalized patients with serious illnesses were eligible for restricted approval(Omokhua-Uyi and Van Staden 2021; Ouyang et al. 2022). More potent treatments or preventive measures are still desperately needed, and studies evaluating earlier initiation or combination with other agents are still ongoing. Remarkably, we observed improved trends in cure rates and outcomes with Remdesivir (albeit statistically insignificant), suggesting potential benefits with tailored administration regimens in sufficiently powered trials(Perumal et al. 2023; Rasmussen et al. 2021). Furthermore, local susceptibility and phylogenetic analyses may make optimal timing and durations more apparent(Roy Chattopadhyay et al. 2020; Ruan et al. 2022).

There are consequences for this study that go beyond critical care. For patients with chronic lung disease, pulmonary rehabilitation programs that maximize respiratory health can be crucial in fostering pre-pandemic resilience against future respiratory pandemics. Tele-rehabilitation models that avoid face-to-face interactions help maintain these interventions during outbreaks(Samieegohar et al. 2022; Saraiva et al. 2021). When redesigned for post-acute COVID-19 clinics that target high-risk populations, virtual follow-ups, remote symptom monitoring, and accelerated access to care could all help lower morbidity. For immunocompromised patients, an early shift from critical care settings to transitional units may facilitate recovery and reduce the risk of nosocomial infections(Serebrovska et al. 2020; Shao, Chen, and Lu 2021; Tian et al. 2022). The report emphasizes the unequal COVID-19 burden among healthcare professionals. Particularly for those directly involved in airway management or aerosol-generating procedures, addressing occupational hazards through engineering controls, protective gear, routine surveillance, and priority vaccinations deserves ongoing attention. Institutional support systems are also necessary to lessen the psychological distress that frontline staff members who are caring for critically ill patients experience(Tian et al. 2022; Trémolières 2023).

A few drawbacks are the retrospective design and the limitations of examining data from a single area. We could not account for all possible confounders, and validating exposures or results using alternative definitions was not feasible(Vijayvargiya et al. 2020; Wang et al. 2021). The number of our centres increased generalizability, and our sample size was suitably powered. Prospective studies filling these gaps are necessary to help inform the best possible clinical judgments during the pandemic(Yan, Ra, and Yan 2021). Pre-existing respiratory conditions independently predict poor outcomes in critically ill COVID-19 patients. Targeted resource allocation and preventive measures are required to reduce the disproportionate burden on vulnerable groups. Remdesivir did not substantially alter overall trajectories in our investigation; however, more research is necessary to create safe and efficient therapies to fight SARS-CoV-2, particularly for individuals with compromised lung function.

Conclusion:

This study shows how important it is for COVID-19 patients in need of intensive care to have pre-existing respiratory comorbidities. The clinical outcomes for patients with asthma, chronic obstructive pulmonary disease, or interstitial lung disease were worse; they required more mechanical ventilation, required longer stays in the intensive care unit, and had higher mortality rates. Targeted preventive efforts and disease management techniques are likely to help these susceptible patient populations become more resilient to SARS-CoV-2 infection. Although our data did not show a discernible reduction in the length of illness or an improvement in discharge outcomes, the effectiveness of the antiviral medication Remdesivir is still unknown. Our ICU cohort's limited use makes it impossible to draw firm conclusions about the therapeutic impact. It is necessary to conduct more research to determine the best times, dosages, and possible benefits of combination therapies. In order to optimize clinical decision-making and policies aimed at reducing the disproportionate disease severity seen in patients with underlying respiratory conditions, more research addressing the gaps in our retrospective study design is necessary.

Declarations

Funding: 'This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant No. KFU242741]'

Conflict of interest: The authors have no conflict of interest to declare.

Ethical statement: Not applicable as this review involves already published studies and no ethical issue.

Acknowledgment: The authors acknowledge the Deanship of Scientific Research at King Faisal University for obtaining financial support for research, authorship, and the publication of research under Research proposal Number (KFU242741)

Author contributions: All authors substantially contributed to the study, including drafting the manuscript, conducting literature searches, analyzing data, critically reviewing the manuscript, and approving the final version for publication.

Data availability: The data that support the findings of this study are available on request

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