

Analysis of Influencing Factors of Mortality in COVID-19 Patients: A Retrospective Cohort Stud

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ABSTRACT

Background

Coronavirus Disease (COVID-19) has spread rapidly around the world since the end of 2019. Because of its high incidence and high mortality, it is currently the most concerned health issue in the world. Clinically, avoiding mortality or severe illness is the main goal of Covid-19 treatment. Some past studies of factors influencing death of COVID-19 patients have shown that older age or certain comorbidities may increase the risk of severe illness in people with COVID-19, and some of these conditions may be fatal.^{1,2} In particular, cancer patients are particularly vulnerable to health consequences after infection, including increased risk of life-threatening infections and interruption of cancer or normal treatment.³ A comprehensive understanding of the factors affecting the mortality of Covid-19 cases and timely implementation of appropriate improvement strategies is one of the most important issues in clinical disease treatment.

Objectives

The purpose of this study was to explore the main influencing factors leading to Covid-19-related mortality and to provide clinical treatment recommendations based on the findings.

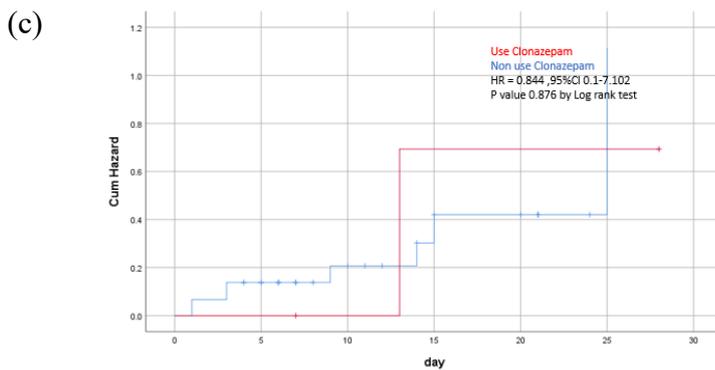
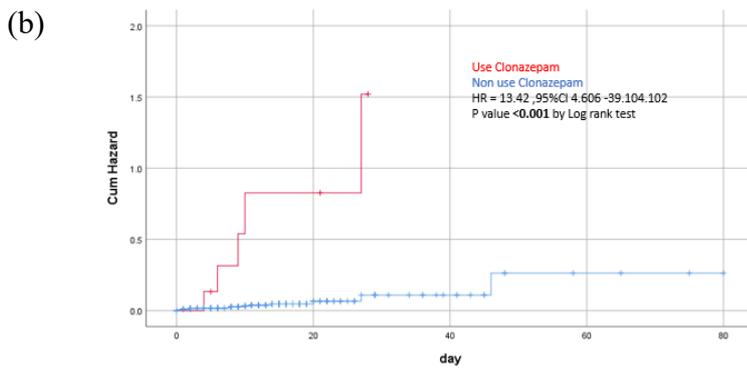
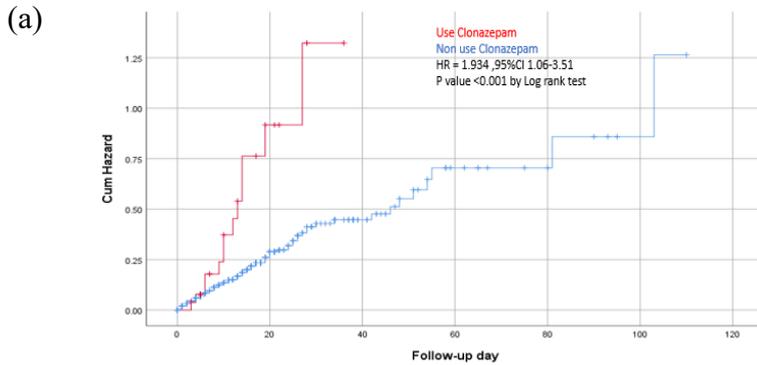
Methods

This study is a retrospective observational study. We obtained data from the Taipei Medical University Clinical Research Database (TMUCRD), which collects three hospital electronic medical records in northern Taiwan. This study obtained 2021.01.01-2021.09.30 inpatients infected by Covid-19 from TMUCRD as the main study cohort. Exclusion criteria included patients admitted to the ICU immediately after admission, deaths within 24 hours of admission, and cases under the age of 20. The patient's first day of hospitalization was the index date, and the mortality was the main outcome. Covariates include demographic characteristics, health status, selected comorbidities and selected medications. Logistic regression with univariate and multivariate analysis method was used to estimate the association of each influencing factor with outcome. In addition, we also used the Cox regression model to conducted a further overall and stratified analysis about the associations between clonazepam use and mortality among COVID patients.

Results

Totally 713 inpatient patients were included in this study. Uni-variable analysis showed that males, elderly, high CCI scores, co-morbidities such as congestive heart failure, cerebrovascular disease, dementia, chronic obstructive pulmonary disease, diabetes, renal disease, cancer, hypertension,

hyperlipidemia, anemia, parkinson's disease, osteoporosis, etc., as well as the use of clonazepam sleeping pills, have a higher risk of mortality. However, after adjustment for other factors, only the following were statistically significant: older age and use of the clonazepam sleeping drug (OR= 4.358; 95% CI: 1.693-11.221; p-value=0.002). The results of the Cox regression found that, overall, clonazepam sleeping pills significantly increase the mortality risk of COVID patients (HR=1.995; 95% CI: 1.007-3.954; p-value=0.048). Especially, when the patient's age was less than 65 years old, $0 \leq CCI < 3$, and no depression, the patients who used clonazepam sleeping pills had a higher risk of mortality than those who did not use clonazepam sleeping pills.



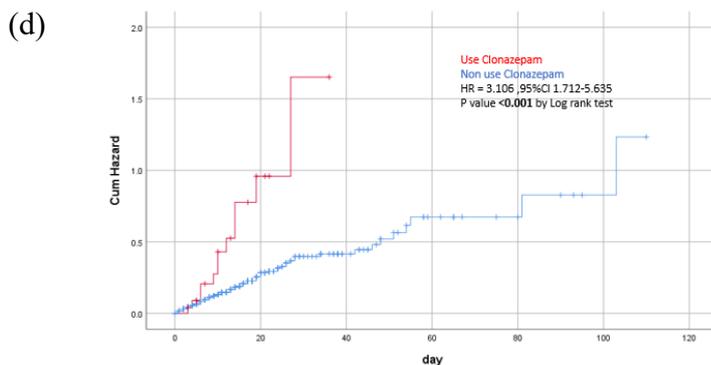


Figure 1. Kaplan-Meier curve for the mortality in COVID-19 patients between clonazepam users and non-users: (a) Overall population; (b) Age <65; (c) patients with depression; (d) patients without depression.

Conclusion

Our results suggest that male, elderly COVID-19 inpatients are at higher risk of mortality. Clonazepam sleeping pills users have significantly higher risk of mortality than non-users significantly. Patients younger than 65 years old, $0 \leq CCI < 3$, and without depression should avoid the use of clonazepam sleeping pills to reduce the risk of mortality.

References

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