RWD299

Healthcare Utilization Among COVID-19 Patients Treated with Nirmatrelvir/Ritonavir in Taiwan: A Nationwide Population-Based Cohort Study

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BACKGROUND&OBJECTIVE

Background

Nirmatrelvir/ritonavir is indicated for mild-to-moderate symptomatic COVID-19 patients at high risk of progressing to severe disease. In a placebo-controlled phase III pivotal trial, the combination treatment demonstrated a significant reduction in COVID-19–related hospitalization or death by day 28 [1]. In Taiwan, nirmatrelvir/ritonavir has been widely prescribed for symptomatic outpatients at public expense since 2022 [2].

Objective

The study aimed to evaluate the healthcare resource utilization (HCRU) among patients receiving nirmatrelvir/ritonavir in Taiwan.

METHODS

Data source

The study utilized the National Health Insurance Research Database (NHIRD) from 1 January 2021 to 31 December 2022.

Study design

Patients were indexed on the first date of nirmatrelvir/ritonavir prescription in 2022 (*index date*). Any hospital admission occurring within 14 day after index date (*infection episode*) will be considered as COVID-19–related hospitalization. Mortality is defined as death due to any cause occurring within 28 days after index date.

Study population

Patients who received their first prescription of nirmatrelvir/ritonavir during outpatient visits in 2022 were included. Individuals without a confirmed COVID-19 diagnosis at the time of prescription were excluded.

Variables

- **Level of care** for hospitalization: Patients were categorized into general wards (GW) and intensive care unit (ICU). If a patient was admitted to ICU at any time during the hospitalization, they were classified under the ICU category, regardless of any stay in GW before or after ICU.
- **Vaccination status**: Patients were classified as vaccinated if they had received at least one dose of a COVID-19 vaccine before the index date. Time from vaccination to index date was also measured and stratified as ≤6 months and >6 months.

Statistical analysis

Descriptive statistics were used to summarize the baseline patient characteristics and HCRU.

RESULTS

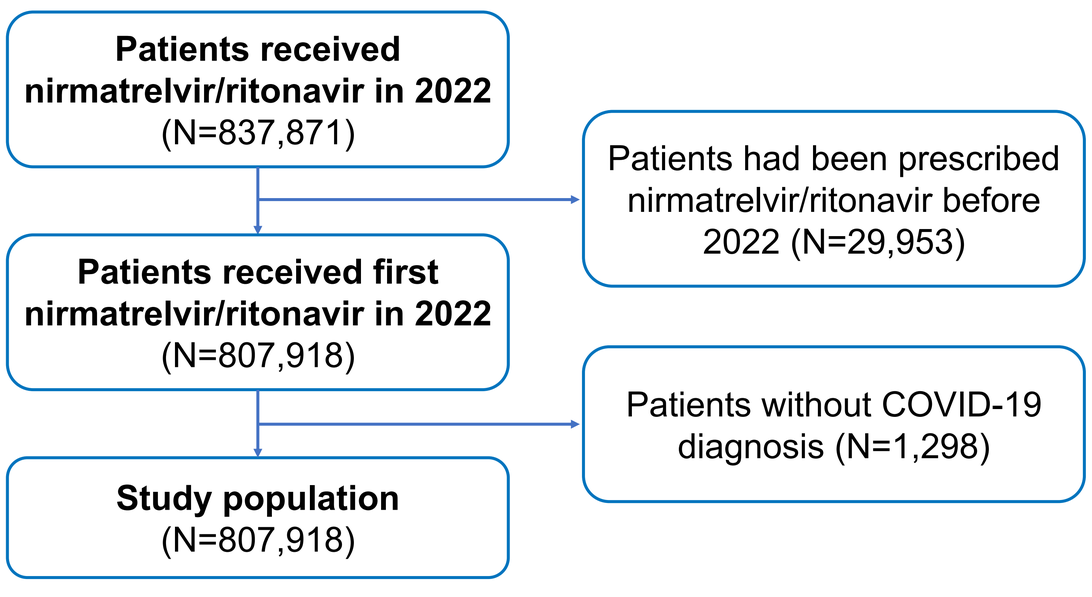

Figure 1. Flow chart of patient selection process

Patient demographics

- A total of 807,918 first prescribed nirmatrelvir/ritonavir patients during 2022 were identified (Figure 1).
  - Mean age at index date was 62.0 ± 17.0 years old, and the majority of patients (58.6%) were aged over 65. (Figure 2).
  - Vaccinated population accounted for 92.2% of total population, with around half (53.1%) receiving COVID-19 vaccination 6 months before index date.

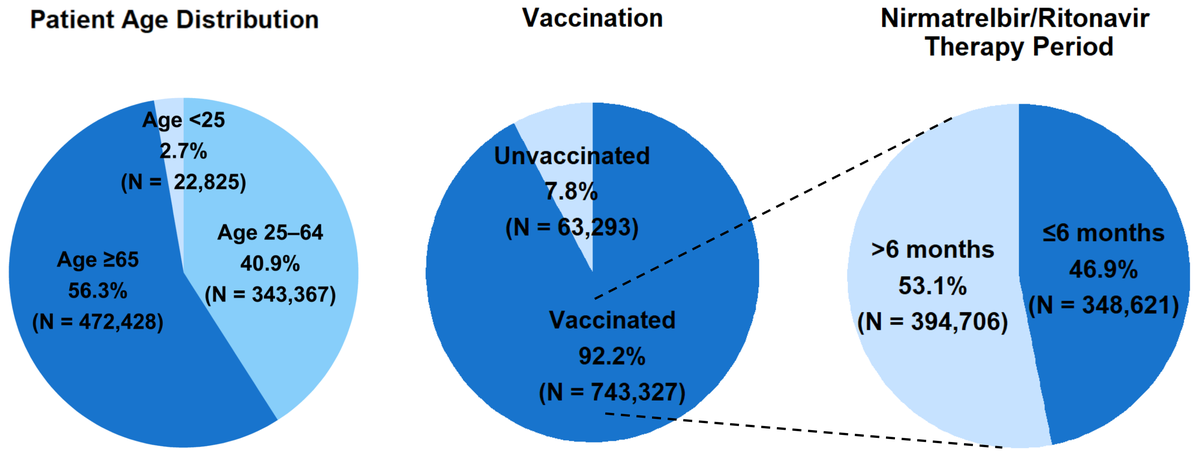

Figure 2. Age, vaccination and Nirmatrelvir/Ritonavir therapy distribution

Clinical outcomes

- Figure 3 shows that 15,330 patients (1.9%) were hospitalized, with an ICU admission rate of 11.7% and a hospitalized mortality rate of 8.6%.
  - After stratification, 6.3% of the unvaccinated population were hospitalized (N=3,967), of whom 13.7% were admitted to ICU and 13.0% died.
  - In contrast, of the vaccinated population, only 1.5% (N=11,363) were hospitalized, among whom 11.0% and 7.0% experienced ICU admission and death, respectively.

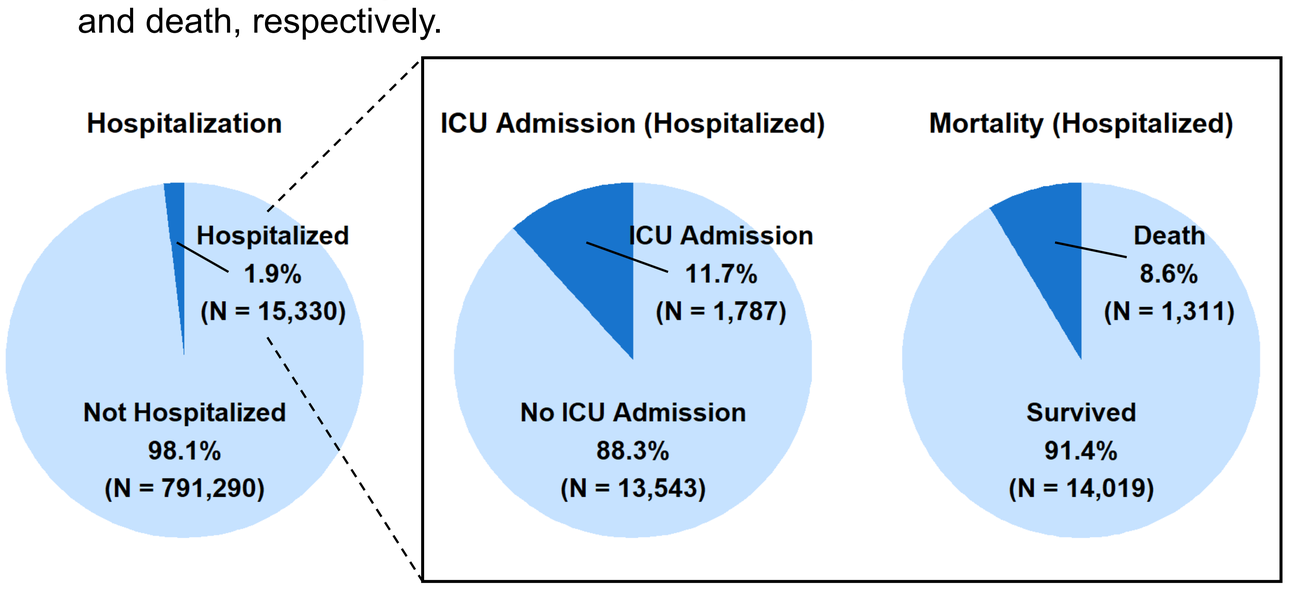

Figure 3. Clinical outcomes of hospitalized patients

Healthcare resource utilization of Hospitalization

- The mean length of hospital stay was 7.8 days for patients who stayed in GW and 17.7 days for those who had been admitted to ICU, with daily costs of NTD $8,791 and $16,432, respectively (Figure 4).

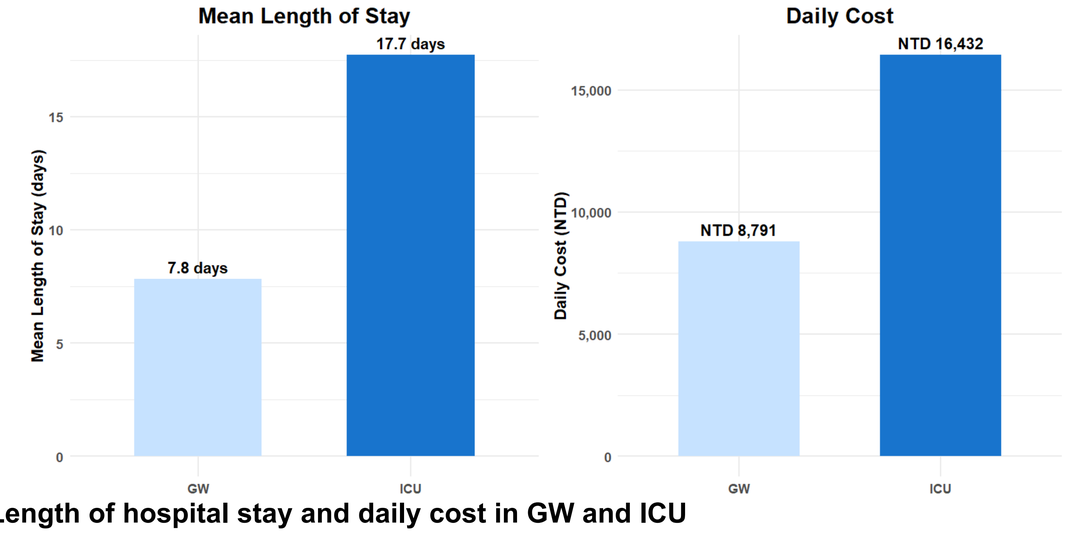

Figure 4. Length of hospital stay and daily cost in GW and ICU

CONCLUSIONS

To best of our knowledge, it is the first study using the nationwide database to investigate the HCRU and costs among patients treated with nirmatrelvir/ritonavir on a cohort level in Taiwan. However, out-of-pocket expenses were not captured in NHIRD. The healthcare utilization might be underestimated. In addition to the benefit of preventing disease progression, further research may focus on the effect of nirmatrelvir/ritonavir on Long-COVID.

REFFERENCES

1. Hammond J, Leister-Tebbe H, Gardner A, et al. Oral Nirmatrelvir for High-Risk, Nonhospitalized Adults with Covid-19. N Engl J Med. 2022;386(15):1397-1408.
2. Taiwan Centers for Disease Control, Ministry of Health and Welfare. Guideline for SARS-CoV-2 Infection Management (Version 26). 1 September 2024. Available from https://www.cdc.gov.tw/Category/Page/xCSwc5oznwcqunujPc-qmQ [accessed on 9/9/2024].

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