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COVID-19 Manifestation on HIV Patients, Is It More Severe? A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - This research receive no external funding.

Review Stage at time of this submission - Risk of bias assessment.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 October 2023 and was last updated on 15 December 2023.

INTRODUCTION

Review question / Objective The primary objective of this systematic review was to examine the various form of COVID-19 severity in PLWH in comparison to the general population using pooled analysis.

Rationale The rapid transmission of the novel coronavirus has resulted in immediate and extensive consequences. As the virus reached almost every part of the world, the World Health Organization (WHO) officially declared COVID-19 to have reached pandemic status. The first confirmed case in Indonesia was reported in March 2020. However, the initial case in point was properly documented in February 2020 for the country's own population. According to a study conducted at Cipto Mangunkusumo Hospital in Jakarta, it was found that the prevalence of COVID-19 among adults with HIV by the end of 2021 was 0.083

(95% CI 0.074-0.092). This incidence was observed to be higher compared to the prevalence of COVID-19 among adults with HIV in Madrid, which was reported as 0.067 (95% CI 0.057-0.079). The current findings exhibit a greater outcome in comparison to a prior meta-analysis encompassing seven trials, with an incidence rate of 0.009 (95% CI 0.006-0.011).

Prior research has examined the impact of COVID-19 on individuals living with HIV. Based on empirical data derived from evidence-based research, individuals who are living with HIV/AIDS or PLWHs, have an equivalent susceptibility to SARS-CoV-2 infection when compared to individuals who do not have HIV/AIDS. PLWHs often belong to the immunocompromised population due to limitations in immune cells such as T cells and humoral cells. This weakened immunological status renders them more susceptible to contracting various opportunistic infections. Individuals on ART will see restoration

of their immunological competence, resulting in an immune system that closely resembles that of the immunocompetent population.

The coinfection of COVID-19 among PLWHs is exhibiting rapid progression. Considering that there have been previous investigations on this topic, unfortunately data summaries regarding the severity of COVID-19 cases in PLWHs have not been widely carried out, thereby pooled analysis of these cases will provide a useful picture. This study aims to calculate the prevalence of COVID-19 cases based on severity in people with HIV compared to general population.

Condition being studied We aim to conduct a comprehensive evaluation of the existing research that have examined the impact of COVID-19 on people living with HIV.

METHODS

Search strategy TA systematic literature search across multiple databases including Pubmed, Science Direct, and Cochrane Library. The search terms used were “2019-nCoV”, “2019 Novel Coronavirus”, “2019 Novel Coronavirus”, “Acute Respiratory Disease”, “Novel coronavirus”, “2019-nCoV infection”, “COVID-19”, “SARS-CoV-2”, “HIV”, “AIDS”, “human immunodeficiency virus”, “acquired immunodeficiency virus”, “PLWH”, “PLHIV”, and “severity”, using Boolean operator “OR” and “AND”.

Participant or population People living with HIV who contracted COVID-19, and people who contracte COVID-19 in general.

Intervention No intervention.

Comparator No intervention.

Study designs to be included This study includes the analysis of articles written in English and published in international journals between the years 2020 and 2022. The selection of articles for analysis is based on their relevance to the specified search keywords. The analysis will focus exclusively on studies employing a descriptive research design without any intervention. These articles must provide comprehensive explanations regarding the demographic features, clinical symptoms, comorbidities, severity, and outcome of both HIV and non-HIV individuals affected by COVID-19. A relevant outcome and no contradictory findings about the impact of COVID-19 co-infection on people living with HIV is included in this study.

Eligibility criteria This study includes the analysis of articles written in English and published in international journals between the years 2020 and 2022. The selection of articles for analysis is based on their relevance to the specified search keywords. The analysis will focus exclusively on studies employing a descriptive research design without any intervention. These articles must provide comprehensive explanations regarding the demographic features, clinical symptoms, comorbidities, severity, and outcome of both HIV and non-HIV individuals affected by COVID-19. Articles should be written in english. A relevant outcomes and no contradictory findings about the impact of COVID-19 co-infection on people living with HIV is included in this study. Articles included in this study should also explain demographic characteristics, clinical manifestations, comorbidities, COVID-19 severity, and outcome of HIV and non-HIV patients affected by COVID-19.

Information sources A systematic literature search across multiple databases including Pubmed, Science Direct, and Cochrane Library.

Main outcome(s)

1. Pooled prevalence of COVID-19 among HIV patients
2. The number of COVID-19 cases among HIV patients based on severity
3. Pooled prevalence of critical COVID-19 among HIV patients
4. Pooled prevalence of moderate COVID-19 among HIV patients
5. Pooled prevalence of mild COVID-19 among HIV patients
6. Comorbidities among COVID-19 patients with and without HIV
7. Clinical manifestations among COVID-19 patients with and without HIV
8. Outcome of COVID-19 among patients with and without HIV.

Quality assessment / Risk of bias analysis We conducted a risk of bias analysis using Joanna Briggs Institute (JBI) checklist for observational studies to critically appraise systematic reviews. Low risk of bias was defined if >85% answer is “Yes”, moderate risk if 70-85% answer is “Yes”, and high risk if <70% of the answer is “Yes”. This decision was based on agreement of all authors.

Strategy of data synthesis Data extraction table with conventional synthesis is used in this study. We produced charts, table and diagrams to describe the demographic characteristics, clinical manifestations, comorbidities, COVID-19 severity, and outcome to compare COVID-19

characteristics in people living with HIV and without HIV.

Subgroup analysis We divide the population within two groups; people living with HIV and without HIV, to compare the demographic characteristics, clinical manifestations, comorbidities, COVID-19 severity, and outcome of COVID-19.

Sensitivity analysis We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to reporting subgroup and sensitivity analysis in this study.

Language restriction Only articles written in English is included.

Country(ies) involved Indonesia (Infection & Tropical Diseases Division of Faculty of Medicine Universitas Padjadjaran-Hasan Sadikin General HospitalPadjajaran University).

Keywords COVID-19, HIV, Severity.

Contributions of each author

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