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Letter to the Editor

**Response to Abdelrahman M et al commentary on
“Parasites Protect from Severe COVID-19. Myth or Reality?”**


Dear Editor,

In a recent correspondence, Abdelrahman et al. (2022) described the protective effect of parasites on COVID-19 as a myth rather than a reality (Bamorovat et al., 2021; Wolday et al., 2021a). In addition, they indicated that a study (Abdoli, 2020) has found that parasitic infections, like helminths, increase the risk of COVID-19 severity.

Concerning our study (Wolday et al., 2021a), they noted that intestinal parasitic co-infection was attributed to having less COVID-19 complications. This is an incorrect interpretation because we in fact demonstrated that less COVID-19 complications were attributed to having pre-existing co-infections with parasites and not vice versa. They incorrectly suggested that the probability of inclusion is associated with COVID-19 exposure and outcome (proportion of parasite co-infection). This is not the case because in our study, we defined exposure as having pre-existing parasite co-infection and outcome as the proportion of developing severe COVID-19. Moreover, admission bias in our cohort was minimal owing to the unique situation of our setting where all COVID-19 cases were followed up, either quarantined in designated isolation hospitals or admitted to the intensive care unit (Abreha et al., 2021; Wolday et al., 2021a).

Surprisingly, Abdelrahman et al. (2022) also incorrectly construed the publication by Abdoli (2020). A more careful review of this study reveals a hypothesis that helminths may increase severity of COVID-19 and also may suppress the immune response to SARS-CoV-2 vaccines but evidence was not provided. In contrast, our findings provide significant correlative evidence embedded in a sound immunologic theory. Indeed, Bradbury et al. (2020) were the first to propose that helminths may negatively impact the pathogenesis of COVID-19. An alternative hypothesis was then suggested by Hayes et al. (2020) that co-infection with helminths may indeed have a mitigating effect against severe COVID-19. Given that parasites have complex inter-relationships with a host and that different species and even different stages of parasite life cycle exerting differential immune responses in the host, we and others argued that parasitic co-infections could be either beneficial or detrimental to COVID-19 severity or their effects on SARS-CoV-2 vaccines (Gutman et al., 2020; Wolday et al., 2021b, Wolday et al., 2021c).

We suggest that before concluding that co-infection with parasitic infection in reducing COVID-19 severity as being a myth, it is imperative to provide evidence. Finally, we agree with Abdelrahman et al. (2022) that more evidence is required to ascertain in de-

tail the causal relationship between parasitic infection and COVID-19 severity.

Declarations Conflict of interest

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Dawit Wolday*
Ethiopian Public Health Institute, Addis Ababa, Ethiopia
Mekelle University College of Health Sciences, Mekelle, Ethiopia

Tobias F. Rinke de Wit
Amsterdam Institute for Global Health and Development, University
of Amsterdam, Amsterdam, The Netherlands
Joep-Lange Institute, Amsterdam, The Netherlands

*Corresponding author: Dawit Wolday, Ethiopian Public Health
Institute, Addis Ababa, Ethiopia;
E-mail addresses: dawwol@gmail.com, dawit_wolday@mu.edu.et
(D. Wolday)