An umbrella review and quality assessment of renin-angiotensin system drugs use and COVID-19 outcomes: what is the quality of the research evidence?

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Background: During 2020, an extensive number of reviews were published on the effect of angiotensin-converting enzyme inhibitors (ACEIs)/angiotensin-receptor blockers (ARBs) on COVID-19 outcomes, yet the evidence appeared heterogenous. We conducted a meta-analysis and quality assessment of these reviews.

Methods: An umbrella review was conducted. Medline, Embase, Scopus, Cochrane library and medRxiv were searched on 1 February 2021. The AMSTAR 2 Critical Appraisal Tool assessed study quality. The Corrected Cover Area (CCA) calculated the degree of study overlap within the reviews.

Results: In 2020/21, 47 reviews on this topic were conducted. The overall confidence in the results was most commonly 'critically low' (n=22, 44.9%), followed by 'low' (n=15, 30.6%) and 'moderate' (n=10, 21.3%). A minority (n=15, 31.9%) established a review protocol a priori. The CCA value was 9.2 indicating a moderate degree of study overlap, yet this analysis was complicated by three studies not fully reporting included studies. In total, 168 studies were known to have been included within the reviews. Most ($n = 99$) were included in three or less reviews, yet one study was included within 37 reviews. Collective evidence indicated good quality evidence on the significant association between ACEIs/ARBs use and reduction in death and death/ICU admission, but poor-quality evidence on reducing severe COVID-19 and increasing hospitalisation.

Conclusions: The superfluous research activities are likely related to the collective interest in the topic, and limited development of review protocols a-priori. Despite quality concerns, our findings do support not discontinuing ACEIs/ARBs therapy in patients with COVID-19.