**Highlight:**

Our comprehensive meta-analysis examines the impact of the BCG vaccine on COVID-19 outcomes, revealing nuanced findings. The analysis across various subgroups suggests that BCG vaccination does not significantly prevent COVID-19 infection, regardless of vaccine type, age groups, or patient characteristics.

However, **we observed significant differences in the subgroup analysis** for patients admitted to the hospital, with the BCG Moscow vaccine group showing significance (p-value = 0.0337) among adult patients (p-value = 0.0117). This highlights the potential of the BCG Moscow vaccine in preventing hospitalization among adults.

Furthermore, BCG vaccination significantly reduces the likelihood of COVID-19 patients being admitted to the ICU, particularly for patients below 60 years old and adults.

While our results indicate a trend towards reduced mortality risk with BCG vaccination, statistical significance was not reached. Notably, further investigation is warranted to explore factors contributing to mortality cases among specific subgroups.

Overall, our meta-analysis provides valuable insights into the nuanced role of the BCG vaccine in COVID-19 outcomes and emphasizes the need for additional research in this area.