Efficacy and Safety of Vonoprazan Triple Therapy (Vonoprazan, Amoxicillin, Clarithromycin) in Patients With Helicobacter Pylori Infection: Systematic Review & Meta-Analysis of Randomised Controlled Trials

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Introduction and Objectives

- The global helicobacter pylori (*H. pylori)* infection rate since 2000 was found to be 42.7% (95% CI: 39-46.5) in females compared to 46.3% (95% CI: 42.1-50.5) in males.[1]
- Currently, there are multiple options for *H. pylori* treatment. However, the ideal regimen to treat this infection is yet to be explored.
- The objective of this systematic review was to compare the efficacy and safety of vonoprazan triple therapy (vonoprazan, amoxicillin, clarithromycin [VAC]) with other active therapies available in treatment of patients with *H. pylori* infection.

Methodology

- PubMed®, Embase®, and Cochrane via Ovid platform were searched until the 20th of May 2022 and reviewed for studies reporting safety and efficacy of VAC in patients with *H. pylori* infection.
- There was no restriction on the year of publication.
- Two reviewers independently searched for articles, reviewed, and extracted data, with differences resolved through consensus.
- The Downs and Black Checklist and Cochrane risk of bias V 2.0 (ROB 2) were used to assess study quality of observational and RCTs, respectively.
- A meta-analysis using fixed effects model was conducted to calculate pooled effect estimates with 95% confidence intervals (CI).

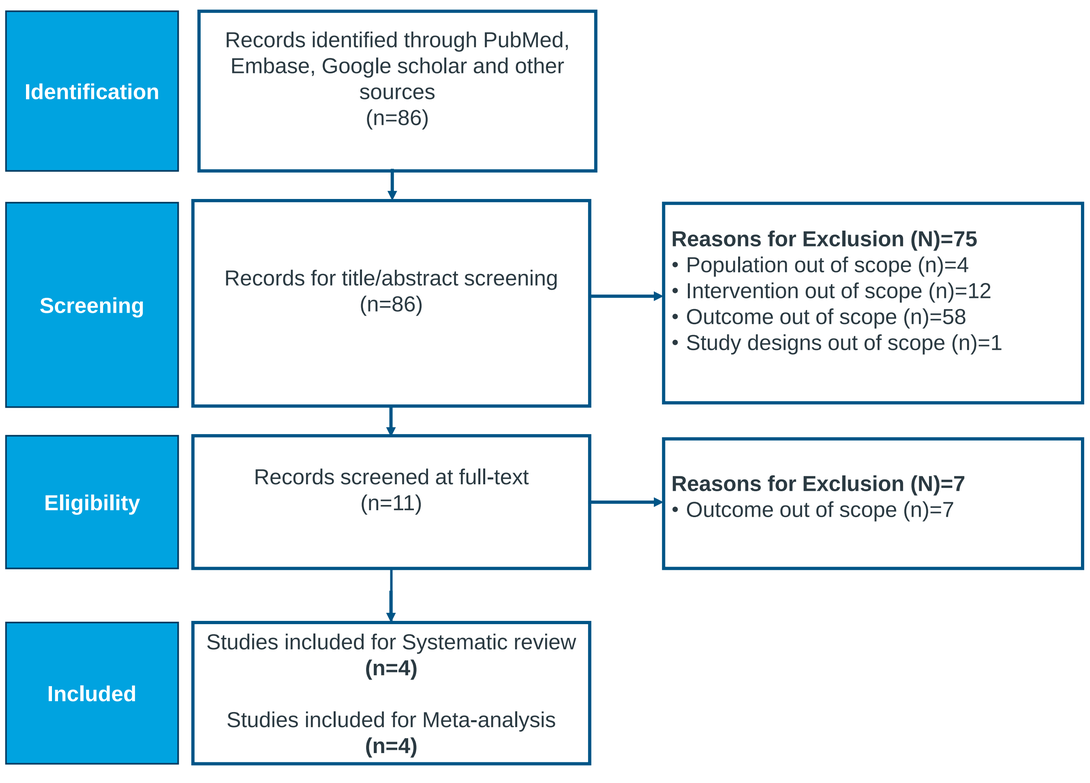
Table 1: Study eligibility criteria

PICOS	Inclusion criteria
Populations	Adults (≥18 years old) with *H. pylori* infection
Interventions/ Comparators	Vonoprazan triple therapy (vonoprazan, amoxicillin, clarithromycin) / Proton Pump Inhibitor (PPI)
Outcomes	Eradication rates and safety
Study designs	Clinical trials, observational study (retrospective or prospective)

Results

Study Selection: The SLR identified four RCTs (n=1019 participants) from 86 publications which were included in the evidence synthesis. (**Figure 1**)

Figure 1: PRISMA chart of included studies



- The pooled analysis of four studies in 1,019 participants found that VAC triple therapy was associated with higher eradication rates[2-5] compared to PPI triple therapy with a risk ratio [RR] 1.20, 95%CI 1.14 to 1.27. (**Figure 2)**
- VAC therapy was associated with lower diarrhoea[2-5] (RR 0.69, 95%CI 0.51 to 0.94) and higher bloating[2-4] effect (RR 2.16, 95%CI 1.04 to4.49) compared to PPI therapy in patients with *H. pylori* infection. (**Figure 3)**
- No significant difference between the two treatment groups in terms of nausea[2-4] (RR 1.48, 95%CI 0.67 to 3.29), dysgeusia[2-5] (RR 1.26, 95%CI 0.94 to 1.70), and skin rash[2-4] (RR 0.47, 95%CI 0.12 to 1.81), as mentioned in Figure 3.

Figure 2: Eradication rate of VAC triple therapy vs. PPI triple therapy

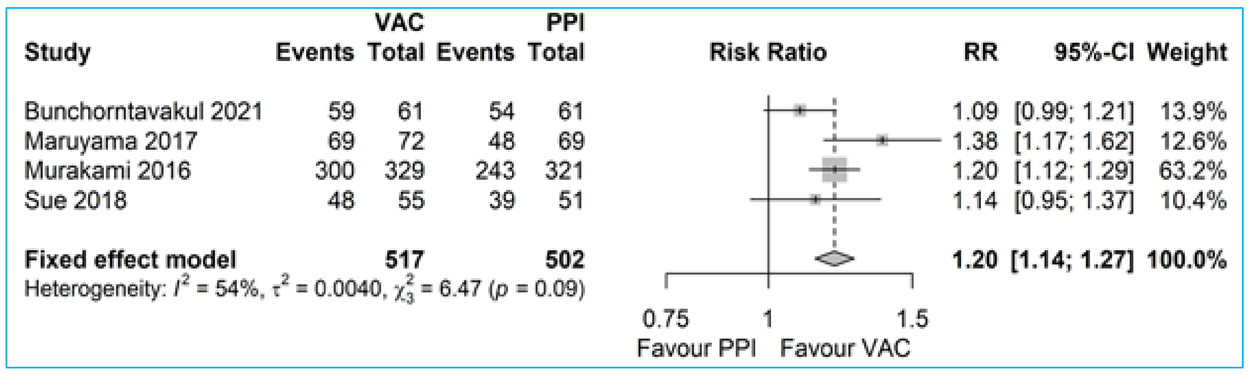


Figure 3: Safety outcomes of VAC triple therapy vs. PPI triple therapy

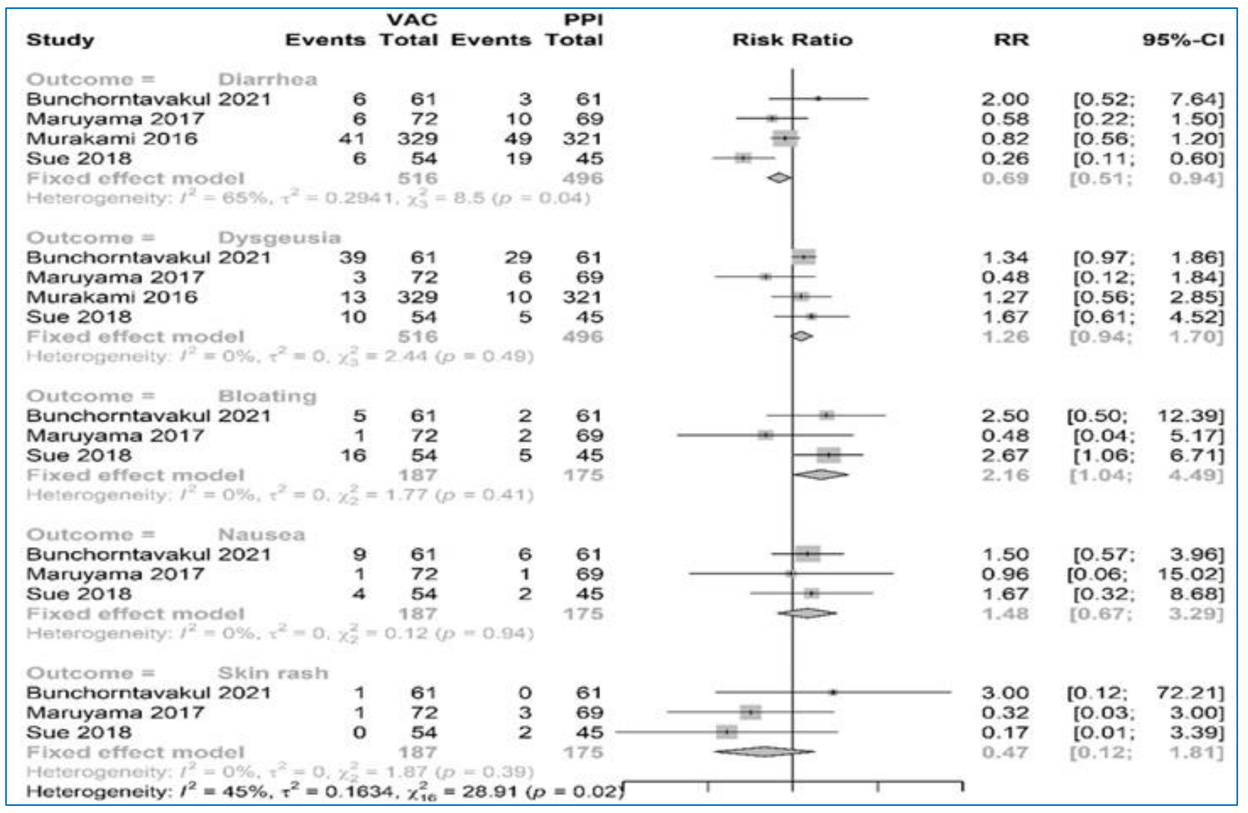


Figure 4: Cochrane Risk of Bias

Reference	Randomisation process	Deviations from the intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Sue 2018	+	+	!	+	!	!
Bunchorntavakul 2021	+	+	!	+	!	!
Maruyama 2017	+	+	!	+	!	!
Murakami 2016	+	!	-	+	!	-

+ Low risk ! Some concerns - High risk

Conclusions

- Overall, despite few limitations, this systematic review provides up-to-date evidence and confirms that VAC based triple therapy found to be superior in the *H. pylori* infection eradication than PPI-based regimen.
- However, no difference was observed with respect to nausea, dysgeusia, and skin rash between treatment groups in patients with *helicobacter pylori* infection.
- Future studies with more research are needed to support the current research question.

References

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