

Global dengue death before and after the new World Health Organization 2009 case classification: a systematic review and meta-regression analysis

ABSTRACT

Background: Since the introduction of 2009 WHO dengue case classification, no literature was found regarding its effect on dengue death. This study was to evaluate the effect of 2009 WHO dengue case classification towards dengue case fatality rate. **Methods:** Various databases were used to search relevant articles since 1995. Studies included were cohort and cross-sectional studies, all patients with dengue infection and must report the number of death or case fatality rate. The Joanna Briggs Institute appraisal checklist was used to evaluate the risk of bias of the full-texts. The studies were grouped according to the classification adopted: WHO 1997 and WHO 2009. Meta-regression was employed using a logistic transformation (log-odds) of the case fatality rate. The result of the meta-regression was the adjusted case fatality rate and odds ratio on the explanatory variables. **Results:** A total of 77 studies were included in the meta-regression analysis. The case fatality rate for all studies combined was 1.14% with 95% confidence interval (CI) of 0.82-1.58%. The combined (unadjusted) case fatality rate for 69 studies which adopted WHO 1997 dengue case classification was 1.09% with 95% CI of 0.77-1.55%; and for eight studies with WHO 2009 was 1.62% with 95% CI of 0.64-4.02%. The unadjusted and adjusted odds ratio of case fatality using WHO 2009 dengue case classification was 1.49 (95% CI: 0.52, 4.24) and 0.83 (95% CI: 0.26, 2.63) respectively, compared to WHO 1997 dengue case classification. There was an apparent increase in trend of case fatality rate from the year 1992-2016. Neither was statistically significant. **Conclusions:** The WHO 2009 dengue case classification might have no effect towards the case fatality rate although the adjusted results indicated a lower case fatality rate. Future studies are required for an update in the meta-regression analysis to confirm the findings.

Keyword: Case fatality rate; Clinical practice guideline; Mortality; Neglected tropical disease; Severe dengue

