**Title:** A systematic review: interventions for improving the retention of physicians working in rural areas to strengthen Primary Health Care.

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**Abstract**

**Background**

The imbalance of health workforce within a country is regarded as a major challenge of improving health equity and strengthening Primary Health Care (PHC). For instance, a half of global population live in rural communities and are served by only 24% of physicians worldwide. A lot of governments have implemented interventions in four categories (education, regulation, financing and professional supports) in accordance with the WHO Global Policy Recommendations. However, no country has yet achieved the equal distribution of health workforce.

**Objectives**

To establish the existing evidence about interventions for improving the retention of physicians serving rural communities.

**Methods**

Cochrane’s EPOC approach was employed to conduct this systematic review.

[Search methods] I searched MEDLINE, Embase, Cochrane Central Register of Controlled Trials, Global Health and Web of Science. We also searched the reference lists of all included literature and conducted a citation search in Web of Science.

[Selection criteria] Randomised controlled trials, non-randomised trials; controlled before-after studies, interrupted time series (ITS) studies and cohort studies investigating the impacts of any interventions amongst four categories on rural retention of physicians.

[Data collection and analysis] One review author independently screened all potentially eligible records, extracted data and assessed risk of bias for each of the included article. Narrative synthesis was conducted due to substantial heterogeneity across the included studies.

**Key findings**

After 1646 records were screened, 10 studies were identified for data synthesis (four from the US; two from Japan; and one from Canada, Thailand and Turkey). Two cohort studies involving 2784 physicians compared rural deployment not linked to education with control. Four cohort studies comprising 7548 physicians compared mandatory service linked to funded education with control. Four ITS studies involving 274130 and 337864 physicians at pre- and post-intervention period compared equity of geographical distribution of physicians within the country between before and after the implementation of nationwide policies. We judged the certainty of the evidence for retention and distribution was all very low mainly due to high risk of bias, low generalisability and imprecision of the effect.

**Conclusions**

There is limited certainty of the evidence due to high risk of bias. Governments should collect comprehensive data (including potential confounders) where researchers can conduct well-designed studies. As for identified interventions, Taiwan’s lesson is noteworthy because it showed that implementation of national health insurance triggered physicians to relocate to rural areas.

**Key words:** health workforce, physicians, retention, rural health, universal health coverage, systematic review