Reviewer's report

Title: Rural retention of physicians graduated from the collaborative project to increase rural doctors in Thailand: A cohort study

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Reviewer: Hiroo Ide

Reviewer's report:

The authors aimed to evaluate the impact of the Collaborative Project to Increase Rural Doctors (CPIRD) in Thailand, using administrative data registered by doctors working for the Ministry of Health (MoH). The main findings of the current manuscript were very interesting but I noted several points to be revised.

Major points

The database used in the current study comprises all physicians working in the MoH. The authors observed that “The government introduced a minimum period of three years' compulsory public service in 1971. This forced the new graduates to work in MoH public services, particularly in rural hospitals for the first three years of their careers” (p. 4, l. 18–20) and “The medical student intake increased from 1,528 in 1997 to 2,282 students per year in 2013” (p. 5, l. 9–10). However, the total number of graduates joining the MoH whose data were used in the study was only 7,157. This number is inconsistent with that stated in the manuscript. Did some new medical graduates were averse to working in the MoH? So, differences in the numbers of graduates between 2000 and 2007 and those working at the MoH are reasonable. However, the results of the current study are hardly generalizable to the context of physician retention in rural areas. Therefore, the authors need to provide a more in-depth discussion to foster further policy in human resources for health both in Thailand and the rest of world.

The observation period was not defined at the beginning of the study. This is understandable because the authors sourced data from the administrative database. The authors defined a 'censored' event as a physician remaining in a rural health facility or the MoH at the end of the study observation period (p. 7, l. 17). When the observation period was defined, it is true that physicians observed shorter than the observation period and still included in the sample at the end of the study were defined as censored. However, if physicians completed the observation period and they worked in rural areas at that time, the authors should treat those cases as nonfailure and noncensored events, which would affect the main results of the manuscript. Otherwise, please specify the definition of the observation period and events used in the study.

With regard to rural retention, the authors should specify if the physicians worked at private practices in rural areas after three years compulsory public service. Did they retain in rural areas?
Minor points
The authors employed Cox’s proportional hazard regression analysis to reveal time trends in physician retention to work in rural districts. The database used contains details of physicians’ sex (e.g., Table 1). Therefore, the authors should reconduct Cox’s proportional hazard regression analysis adjusted by sex. In addition, if other demographic characteristics of physicians were available, the authors should also reanalyze using those data.

The authors should compare a cohort of CPIRD track physicians of a given year with that of normal track physicians of the same year (p. 9, l. 13–21).

I could not precisely evaluate the statistical methods used in the study. The authors wrote that “522 data sets of individual physicians were excluded as they were incomplete” (p. 9, l. 1–2). However, the data should have been included in the analysis with the view of intention-to-treat.

The reported results with regard to physician retention in rural areas and at the MoH are a little complicated and difficult to understand. I think it would be better to separate the results for rural retention of physicians and those for physicians in the MoH.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.