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Impact of healthcare access and livelihood support on deforestation rates in Kalimantan, Borneo

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Introduction

An undervalued role of rural healthcare provision is its impact on forests and carbon balance. In addition to the effects of healthcare provision and livelihood programmes on improved human health, these programmes can also reduce forest degradation and prevent deforestation-related carbon emissions, since unaffordable healthcare drives logging as a source of rescue income. Shocks such as the Covid-19 pandemic may exacerbate this dynamic. Health In Harmony and Planet Indonesia are two planetary health non-governmental organisations (NGO's) that work together with communities living in and around tropical rainforests in West Kalimantan, Indonesia.

Methods

We used a cross-sectional mixed-methods survey in November-December 2021 to evaluate healthcare access and livelihoods in 1,016 households across six NGO-affiliated villages and four unaffiliated control villages. Additionally, satellite-generated imagery retrieved between January 2018 and December 2021 was used to contrast relative deforestation rates in 28 NGO-affiliated and 1,421 unaffiliated control villages bordering protected rainforests across Kalimantan.

Ethics

This study was approved by the Stanford University Institutional Review Board and by the Institut Pertanian Bogor Ethical Review Board.

Results

After accounting for environmental variables that affect deforestation, satellite analysis suggested that prior to the Covid-19 pandemic, average weekly deforestation rates in NGO-affiliated villages (0.018%; 95% confidence interval (CI), 0.012-0.026%) were 70% lower than in unaffiliated villages (0.062%; 95%CI, 0.045-0.078%; p<0.0001). Following the WHO pandemic declaration, deforestation rates dropped and then gradually rebounded in both NGO-affiliated and unaffiliated villages, with NGO-affiliated villages maintaining significantly lower average deforestation rates (0.008%; 95%CI, 0.005-0.011%) during the pandemic than unaffiliated villages (0.026%; 95%CI, 0.019-0.032%; p<0.01). Survey results indicated that clinic visits, out-of-pocket healthcare spending, and the proportion of households unable to access healthcare increased across all villages during the pandemic. The main reasons given for access problems were around fears of contracting Covid-19, unaffordability, or clinic closure. Throughout the pandemic, households affiliated with Health In Harmony, which runs a health clinic, were less likely to report barriers to affordable clinic access than households in unaffiliated villages (14% vs. 29%; odds ratio (OR); 0.41,95%CI, 0.2-0.69). Households in NGO-affiliated villages were more likely to do jobs with low environmental impact (e.g., small-scale farming, conservation; OR 1.61,95%CI, 1.15-2.24). Half of households in both groups reported income loss from at least one source during the pandemic, but households in NGO-affiliated villages were more likely to gain alternative income from multiple job types, especially resource-neutral jobs (e.g., public servant, sales, services). Additionally, households in NGO-affiliated villages had more sources of economic support, such as government programmes, co-operatives, family and NGO's (OR 1.36, 95%CI, 1.11-1.69).

Conclusion

Communities with better access to healthcare and livelihood support were associated with significantly lower deforestation rates prior to the Covid-19 pandemic, and this lower reliance on forest-degrading income was resilient to the pandemic shock.

Conflicts of interest

None declared.