Economic evaluation of improving HIV self-testing among men who have sex with men in China using a crowdsourced intervention: a cost-effectiveness analysis

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Background: HIV self-testing(HIVST) is recommended by the World Health Organization to enhance HIV testing services. Crowdsourcing, an approach that taps into the wisdom of crowds, has been successful in generating strategies to enhance HIVST uptake. We determined the cost-effectiveness of a crowdsourced intervention (one-off or annual) compared to a control scenario (no increase in HIVST) among men who have sex with men(MSM) living in China.

Methods: We used data from our cluster randomized controlled trial of MSM(NCT02796963). We included direct health costs($USD2017) from a health provider perspective. Using outputs from a dynamic transmission model over a 20-year time horizon, we estimated the incremental cost-effectiveness ratios(ICER) using cost per quality adjusted life years(QALYs) gained with 3% discounting. The one-off intervention increased HIVST by 1.89 (95%CI:1.50-2.38) for one year, whereas we assumed an annual intervention increased HIVST throughout the 20-year time horizon. An intervention was cost-effective if the ICER was <1x gross domestic product(GDP; $8823).

Results: Across all cities, the crowdsourced intervention was cost-effective compared to the control scenario. The one-off intervention was cost-saving in Guangzhou and Qingdao. The ICERs for one-off intervention was $204 per QALY in Jinan and $171 per QALY gained in Shenzhen. The ICERs for annual intervention was $2,263 per QALY in Guangzhou, $6,152 per QALY in Qingdao, $5,743 per QALY in Jinan, and $1,161 per QALY gained in Shenzhen. Deterministic univariate and probabilistic sensitivity analyses confirmed the robustness of the findings; specifically, changes in discounting, costs of the crowdsourced intervention, costs of HIV testing and cost of ART did not alter our conclusions.

Conclusion: Scaling up a one-off or annual crowdsourced HIV prevention intervention in four cities in China was cost-effective or even cost-saving in some cities. Further research is warranted to evaluate the feasibility of scaling up crowdsourced HIV prevention interventions in other settings and populations.

Disclosure of Interest Statement:
No conflicts of interest to declare.