

**Title: National scale-up of psychological intervention for harmful alcohol use among men in India: A cost-benefit analysis**

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**Conflicts of Interest:** None

**Background:** In India, the Counseling for Alcohol Problems (CAP), a brief psychological intervention delivered by lay workers, has shown to have sustained cost-effectiveness at 12 months for increasing remission and abstinence rates in 18-65 years old men with harmful alcohol use. We conducted a cursory cost-benefit analysis for CAP national scale-up.

**Methods:** We conducted a retrospective analysis for annual costs and economic benefits of CAP scale up in 2019. Health system integration costs for CAP (HS costs) were obtained from CAP sustained cost-effectiveness study. The per capita gross domestic product (GDP) and total health expenditure (THE) values for 2019 were obtained from GHDx. AUD prevalence and DALY values were taken from Global Burden of Diseases (2019). Annual scale-up costs for meeting overall need was the product of the AUD prevalence in 20-64 men and the per capita HS costs. The economic benefits were potential averted AUD DALYs multiplied with the non-health GDP per capita (GDP - THE). Net benefits were the difference between economic benefits and scale-up costs.

**Results:** In 2019, the annual cost for national CAP scale-up was US\$2,349,441,166 (95% Uncertainty Interval: 1,933,157,735-2,823,118,648). This was 0.024% of GDP and 0.67% of THE. The economic benefit from DALYs averted was \$13,340,779,916 (95%UI: 10,138,772,438-17,259,482,864). The net benefits were \$10,991,338,750.

**Conclusion:** The benefits of CAP scale-up are substantial and the costs are less than <1% of health expenditure, making it feasible.

# National scale-up of psychological intervention for harmful alcohol use among men in India: A cost-benefit analysis

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## INTRODUCTION

India accounts for 15% of the global burden of alcohol use disorders (AUDs)<sup>1</sup>. Counseling for alcohol problems (CAP), a psychological intervention provided by lay health workers was shown to have *sustained cost-effectiveness* at 12 months follow-up for increasing remission and abstinence rates in 18-65 years old men with harmful alcohol use<sup>2</sup>. National scale-up of CAP can mitigate treatment gaps with positive population health impact. We had three aims. To calculate the -  
 a. **Scale-up costs** for CAP to meet total and unmet needs of AUD burden  
 b. **Economic benefits** due to averted disease burden of AUD  
 c. **Net benefits** of CAP scale-up

## METHODS

**Study design:** A retrospective analysis for India in 2019

**Data Sources and variables:**

Study assessing the sustained effectiveness and cost-effectiveness for CAP<sup>2</sup> - *Cost of integration into the health system (HS), societal costs.*

Global Health Data Exchange<sup>3</sup> - *Per capita gross domestic product (GDP), total health expenditure (THE), government health expenditure (GHE).*

Global Burden of Disease 2019<sup>1</sup> - *2019 AUD prevalence and disability adjusted life-years (DALYs) for the men in the 20-64 age group.*

National Mental Health Survey 2015-16<sup>4</sup> - *self reported treatment gaps for AUD.*

**Data analysis:**

Analysis was conducted for three outcomes with all costs adjusted to 2019 Int\$. Uncertainty intervals (UI) were propagated from DALYs.

### Scale-up cost analysis

Scale-up costs for total needs = AUD prevalence \* (HS/societal costs)

Scale-up costs for unmet needs = (Treatment gap \* AUD prevalence) \* (HS/societal costs)

### Economic benefits using Human Capital Approach (HCA) and Value of Life-Year (VLY) approach

Factor multiplied for HCA=1 and VLY =2.8

Economic benefits for total need = (GDP per capita - THE) \* Potential AUD DALYs averted \* factor

Economic benefits for unmet need = (GDP per capita - THE) \* treatment gap \* potential AUD DALYs averted \* factor

### Net benefits = scale-up costs - economic benefits

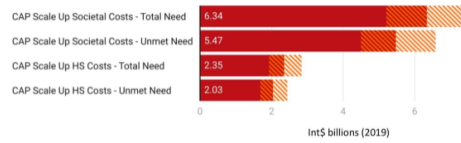
Scale-up costs for total and unmet need using HS and societal costs were used resulting in 4 scale-up costs.

Economic benefits for total and unmet need using HCA and VLY were used resulting in 4 values of economic benefits.

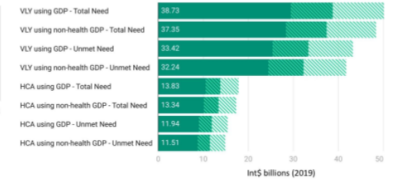
This resulted in total 16 values of net benefits.

## FINDINGS

Billion Int\$ 2019 (95% Uncertainty Interval)



Billion Int\$ 2019 (95% Uncertainty Interval)



In 2019, annual scale-up costs ranged from **Int\$ 2,027,567,727** (95%UI: 1,668,315,126 - 2,436,351,394) to **Int\$ 6,335,864,198** (95%UI: 5,213,250,308 - 7,613,255,708). The minimum cost of scale-up amounts to 0.024% of GDP and 0.67% of THE.

The economic benefits ranged from **Int\$ 11,513,093,068** (95%UI: 8,749,760,614 - 14,894,933,712) for covering unmet need using HCA analysis to **Int\$ 38,729,041,518** (95%UI: 29,433,432,014 - 50,105,258,660) for covering total need using VLY

Billion Int\$ 2019

Legend: 4-6.03, 6.05-7.80, 7.80-10.99, 10.99-27.96, 27.96-31.40, 31.40-36.38, >36.38

Benefit-Cost Combinations	CAP Net Benefits - Total Need	CAP Net Benefits - Unmet Need
Benefits by HCA using GDP - Scale-up using HS Costs	11	10
Benefits by HCA using non-health GDP - Scale-up using HS Costs	11	9
Benefits by VLY using GDP - Scale-up using HS Costs	26	31
Benefits by VLY using non-health GDP - Scale-up using HS Costs	35	30
Benefits by HCA using GDP - Scale-up using Societal Costs	7	6
Benefits by HCA using non-health GDP - Scale-up using Societal Costs	7	6
Benefits by VLY using GDP - Scale-up using Societal Costs	32	28
Benefits by VLY using non-health GDP - Scale-up using Societal Costs	31	27

The net benefits of scaling-up CAP to meet total needs using HS costs ranged from **Int\$ 10,991,338,750** to **36,379,600,352**.

While the net benefits using societal costs ranged from **Int\$ 70,04,915,718** to **32,393,177,320**.

The net benefits of scaling-costs to meet unmet need using HS costs ranged from **Int\$ 9,485,525,341** to **31,395,595,104**.

While the net benefits using societal costs ranged from **Int\$ 6,045,242,265** to **27,955,312,027**.

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## CONCLUSIONS

The net benefits of national scale-up of CAP are substantial. We provide a library of estimates for scale-up costs and benefits using sustained effectiveness of CAP. Future expansion of these estimates is essential to improve mental health planning and financing especially in low- and middle-income countries.

Limitations: The study looks at annual values for 2019. The study assumes that all AUD disease burden can be met by CAP-like psychological interventions. Gender and sex were used interchangeably due to limitations in available data.

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