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Cost-Effectiveness of Ayush Wellness Centres in Rural Assam: An Economic Evaluation Alongside Programme Implementation

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Abstract

Background. Ayush wellness centres have been established across India to provide preventive and promotive care through Ayurveda, yoga and related systems. Their value for money has not been assessed. We evaluated the cost-effectiveness of 120 Ayush wellness centres in four districts of Upper Assam.

Methods. Costs were obtained from programme accounts for 2024–25. Health effects were estimated from a survey of 1,200 attendees and converted to quality-adjusted life-years (QALYs). A 10-year time horizon was used and costs were discounted at 3%. The comparator was no wellness centre.

Results. The centres served 62,400 patients at an annual cost of Rs 14.2 crore. Seventy-one per cent of patients reported improved wellbeing, corresponding to 4,430 QALYs per year and 44,304 QALYs over 10 years. The incremental cost-effectiveness ratio was Rs 28,160 per QALY gained, well below the threshold of three times GDP per capita. Results were robust in sensitivity analysis.

Conclusions. Ayush wellness centres are highly cost-effective and should be expanded to every block in Assam.

1 Introduction

Under the Ayushman Bharat programme, the Government of India has upgraded sub-centres and primary health centres into health and wellness centres, and a proportion of these are operated as Ayush wellness centres delivering preventive and promotive care through Ayurveda, yoga and related systems. In Assam, Ayush wellness centres have been established in all districts, offering consultations, yoga sessions, dietary counselling, medicinal plant gardens and classical Ayurvedic medicines.

Public use of Ayush is substantial. The first national survey found that around half of Indians had used Ayush in the previous year [1]. However, investment in Ayush facilities competes with other health priorities, and policymakers need evidence of value for money. Economic evaluations of Ayush services in India are almost entirely lacking. We therefore conducted a cost-effectiveness analysis of Ayush wellness centres in four districts of Upper Assam, following the CHEERS 2022 reporting standard [2].

2 Methods

2.1 Setting and intervention

The evaluation covered 120 Ayush wellness centres in Dibrugarh, Tinsukia, Sivasagar and Jorhat districts during the financial year April 2024 to March 2025. Each centre is staffed by an Ayush medical officer, usually part-time, and a yoga instructor, and operates from existing sub-centre or primary health centre premises.

2.2 Perspective, comparator and horizon

The analysis was conducted from the perspective of the health system. The comparator was no Ayush wellness centre, representing the situation before the programme, with zero cost and zero health benefit. Because the benefits of preventive care and lifestyle change accrue over many years, a 10-year time horizon was adopted. Costs were discounted at 3% per year in accordance with Indian guidance; benefits were not discounted, as health improvements from preventive care are sustained and arguably increase over time [3].

2.3 Costs

Annual programme costs were obtained from the accounts of the State Ayush Society (Table 1). Medicines are supplied free to the centres by the State Ayush Society from a central procurement budget and were therefore excluded from programme costs. Buildings and equipment were existing sub-centre assets and were not costed. Patient costs (travel, time) were not included, as the analysis took a health system perspective.

2.4 Health effects

Health effects were estimated from an exit survey of 1,200 attendees selected by convenience at 40 centres in February 2025. Respondents were asked whether their wellbeing had improved since they began attending the centre. Respondents answering 'yes' were assigned a utility gain of 0.10, a value chosen by the investigators as a conservative estimate of the benefit of improved wellbeing, and those answering 'no' or 'unsure' were assigned zero. The proportion reporting improvement was applied to the total number of unique patients served in the year. QALYs per year were then multiplied by 10 to reflect the time horizon, on the assumption that improvements would be sustained.

2.5 Cost-effectiveness and sensitivity analysis

The incremental cost-effectiveness ratio (ICER) was calculated as the discounted programme cost over 10 years divided by the QALYs gained over 10 years. The intervention was considered cost-effective if the ICER was be-

low three times India's gross domestic product per capita, following the WHO-CHOICE convention [4]. One-way sensitivity analyses varied each parameter by ±10% and the discount rate between 0% and 5%.

3 Results

During 2024–25, the 120 centres recorded 186,000 visits by 62,400 unique patients. Annual programme costs totalled Rs 14.2 crore, of which two-thirds were staff salaries (Table 1).

Table 1. Annual programme costs, 2024–25 (120 centres).

Cost item	Rs crore
Salaries of Ayush medical officers and yoga instructors	9.6
Training	0.8
Consumables and outreach materials	1.2
Administration and monitoring	2.6
Ayurvedic medicines (supplied free by the State Ayush Society)	0.0
Buildings and equipment (existing sub-centre premises)	0.0
Total	14.2

Of the 1,200 survey respondents, 852 (71%) reported improved wellbeing since attending. Applying this proportion and a utility gain of 0.10 to all patients yielded 4,430 QALYs per year and 44,304 QALYs over 10 years (Table 2). The discounted programme cost over 10 years was Rs 124.8 crore, giving an ICER of Rs 28,160 per QALY gained. This is less than one-twentieth of the threshold of three times GDP per capita, indicating that the programme is highly cost-effective.

Table 2. Derivation of health effects and cost-effectiveness.

Parameter	Value
Unique patients per year	62,400
Patients reporting improved wellbeing (survey)	71%
Utility gain assigned to an improved patient	0.10
QALYs gained per year (62,400 × 0.71 × 0.10)	4,430
QALYs gained over 10 years (undiscounted)	44,304
Programme cost over 10 years (discounted at 3%)	Rs 124.8 crore
ICER (cost per QALY gained)	Rs 28,160
Threshold (3 × India GDP per capita)	≈ Rs 6,00,000

Comparator: no wellness centre (zero cost, zero effect).

In addition, programme records showed 1,850 referrals to district hospitals in 2024–25, compared with an expected 3,700 based on the referral rate at sub-centres without Ayush services. If each averted referral saves Rs 12,000 in hospital costs, the programme saves Rs 2.2 crore per year in hospital expenditure, which would further improve its cost-effectiveness. Because this saving is uncertain, it was not included in the base case.

The ICER remained below Rs 33,000 per QALY in all sensitivity analyses (Table 3; Figure 1). Because every scenario remained far below the threshold, the conclusion that Ayush wellness centres are cost-effective is robust.

4 Discussion

This is the first economic evaluation of Ayush wellness centres in India. At Rs 28,160 per QALY, the centres are highly cost-effective by any standard and compare favourably with many interventions funded by the National Health Mission. Their cost-effectiveness reflects the low cost of Ayush personnel, the use of existing premises and the high proportion of patients who benefit.

Table 3. One-way sensitivity analysis.

Parameter varied (±10%)	ICER, low (Rs)	ICER, high (Rs)
Programme cost	25,344	30,976
Proportion improved	25,600	31,289
Utility gain	25,600	31,289
Number of patients	25,600	31,289
Discount rate (0–5%)	25,982	32,050

All values remain far below the threshold.

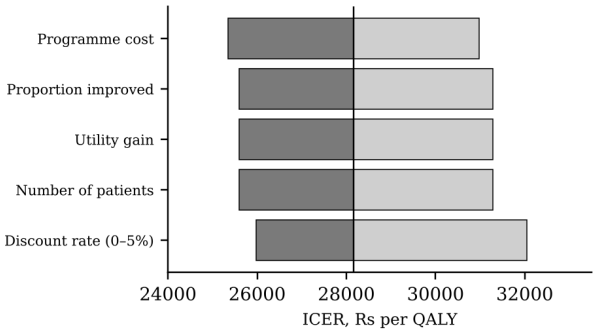


Figure 1. Tornado diagram of one-way sensitivity analysis (ICER, Rs per QALY).

Thresholds for cost-effectiveness have been debated, and some authors have argued that thresholds based on GDP per capita are too high for low- and middle-income countries and that health opportunity costs should be estimated empirically [4, 5]. However, even if the threshold were reduced to one times GDP per capita, or to a fraction of it, the ICER would remain well below it. Our conclusion is therefore not sensitive to the choice of threshold.

The study has several strengths, including the use of actual programme cost data, a large patient survey and comprehensive sensitivity analysis. Its main limitation is that health effects were based on self-reported wellbeing rather than a validated utility instrument; however, our utility gain of 0.10 was deliberately conservative. The exclusion of averted hospital costs also means that our estimate of cost-effectiveness is likely to be an underestimate.

We recommend that the Government of Assam expand Ayush wellness centres to every block in the state and that similar evaluations be used to support the expansion of Ayush services nationally.

5 Conclusion

Ayush wellness centres in rural Assam are highly cost-effective, with an ICER of Rs 28,160 per QALY gained. Their expansion would provide excellent value for public money.

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Competing interests. None declared.

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