



Cost Effective Interventions for Beedi Cessation in India



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Vital Strategies**

Why and where to invest for effective beedi cessation

India faces a unique challenge in terms of high tobacco burden, which is further complicated by availability of multiple tobacco products. Among these, beedi consumption remains a significant public health concern in India, contributing to high rates of chronic respiratory diseases, cardiovascular conditions, and various cancers among over 7.2 crore beedi smokers. Promoting beedi cessation is therefore critical not only to reduce disease burden but also to address health inequities by reaching underserved communities with limited access to cessation resources. Despite the magnitude of the problem, there has been limited research focused specifically on strategies for beedi cessation. This policy brief outlines the most effective strategies for beedi cessation, emphasizing cost-effectiveness, equitable distribution, and feasibility of implementation across diverse settings in India.

Assessment Methodology

Cost effectiveness: This criterion evaluates the financial efficiency of each intervention through cost utility analysis. To quantify economic efficiency, we calculated the Incremental Cost-Effectiveness Ratio (ICER) for each intervention which is a metric used to compare the cost per unit of health benefit gained. Following WHO recommendations, the interventions with high effectiveness were considered and were assessed to quantify their economic efficiency considering both the direct costs of implementation and the potential utilities gained in terms of Disability Adjusted Life Years (DALYs) averted.

Equity Impact: This criterion examines how each intervention affects different population groups, particularly marginalized or lower-income communities that are more likely to consume beedis. By adapting an AAAQ equity model (WHO, 2023) which assess the Availability, Accessibility and Acceptability for general as well as vulnerable and marginalized populations. To visually and objectively represent the equity impact, a color-coded system was used—red (score-1) indicates low equity, yellow (score-2) denotes moderate equity, and green (score-3) signifies high equity—making it easier to identify gaps and strengths in each intervention's equity profile.

Interventions: We considered two major categories of interventions for tobacco cessation. The first category included behavioral interventions such as support through quitlines, behavioral interventions delivered by ASHAs, at HWC level and at CHC levels. The second category comprised behavioral interventions combined with pharmacotherapy, which included nicotine replacement therapy (NRT), bupropion, and varenicline. These interventions were selected based on recommendations from the World Health Organization (WHO), which identifies them as among the most effective strategies for supporting tobacco cessation.

Data sources:

Published scientific literature, WHO reports and guidelines, NTCP documents issued by Government of India.

Ref:

Strengthening health systems for treating tobacco dependence in primary care (WHO, 2013)

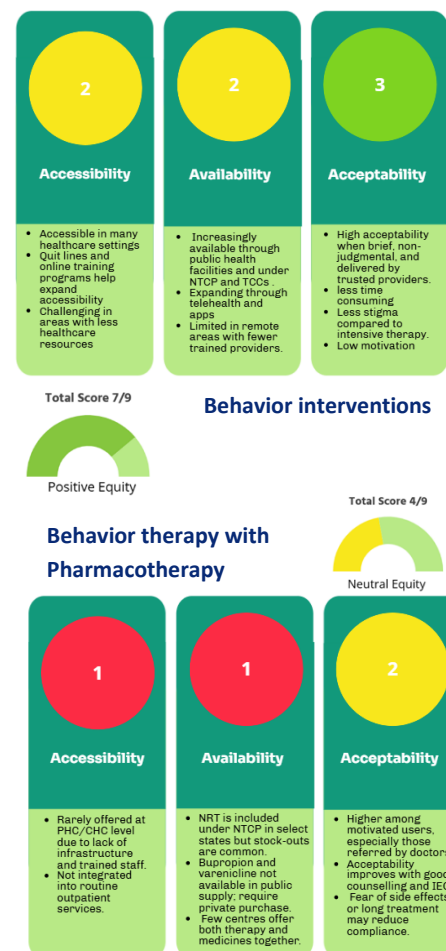
How to equity proof your policies and interventions (World Health Organization, 2023)

Beedi cessation interventions and their cost per averted DALYs (in INR)

	Intervention	Description	Cost per DALY averted (INR)
Behavior intervention	Quitline	Telephone-based counselling service providing structured tobacco cessation support.	27,127
	Behavior Intervention by ASHA	Tobacco cessation counselling delivered by trained ASHAs during routine community visits.	1,958
	Behavior Intervention at Primary level (HWC)	Brief tobacco cessation advice and follow-up provided by healthcare providers at HWC.	392
	Behavior Intervention at CHC level	Structured counselling sessions delivered by trained staff at CHCs, including referral support.	466
	Intensive Behavior therapy	In-depth counselling for high-dependence tobacco users, usually at higher-level facilities.	5,004
Behavior therapy with Pharmacotherapy	Behavioral intervention + NRT	Counselling combined with Nicotine Replacement Therapy (patches, gums) to manage withdrawal symptoms	27,532
	Behavioral intervention + Bupropion	Counselling supported by prescription of bupropion to reduce cravings and aid cessation.	11,166
	Behavioral intervention + Varenicline	Counselling integrated with varenicline use, which reduces nicotine cravings and withdrawal.	5,940

*HWC – Health and Wellness Centers; CHC – Community Health Centers; NRT – Nicotine Replacement Therapy; DALY – Disability Adjusted Life Years

Equity scores



Cost descriptions and expected benefits for successful implementation of the interventions

Intervention	Input cost	Cost per user (INR)	DALY averted	Deaths averted
Brief advice (HWC level)*	INR 300 Cr	41.67	77,22,000	3,15,480
Intensive behavior therapy	INR 4,920 Cr	683.33	98,28,000	4,01,520
Behavior therapy with pharmacotherapy*	INR 27 Cr	1,225.94	44,577	1,821

*Most cost-effective interventions from the assessed intervention cohorts considered for estimations

A median investment of **INR 41.67 per beedi user** amounting to a total cost of INR 300 crores, has the potential to enable over **4.75 lakh beedi users to quit**, resulting in a reduced health burden by averting over **3.15 annual deaths** and **77.22 lakh annual DALYs** lost due to beedi consumption.

When equated with the GDP per capita of the country, this can avert over **INR 325 billion** worth of potential economic productivity losses, which are otherwise lost due to beedi consumption in India.

Recommendations

Based on WHO recommendations for best buy strategies for cessation amongst beedi smokers, behavioral intervention at population level, intensive behavioral therapy and intensive behavioral therapy with pharmacotherapy were assessed using the criteria of cost effectiveness, equity impact and feasibility. From the analysis, this policy brief recommends that:

- Brief tobacco cessation advice delivered at HWCs (INR 392/DALY averted) and CHCs (ICER INR 466/DALY) emerges as the most cost-effective strategy. This approach influences existing infrastructure and frontline providers, offering high health impact at minimal cost. Integrating brief advice into routine care at HWCs and CHCs should be prioritized in cessation programs nationwide.
- Brief advice delivered by ASHAs is also highly cost-effective (INR 1,958/DALY averted). ASHAs can play a crucial role in expanding the reach of cessation interventions, especially in rural and underserved areas, ensuring equity and community engagement.
- Intensive Behavioral Therapy provided through specialized Tobacco Cessation Clinics (TCCs) shows a strong cost-effectiveness (INR 5,004/DALY averted). Though it involves higher input costs, it remains well within national cost-effectiveness thresholds, making it suitable for high-risk populations, such as individuals with chronic conditions or heavy dependence.
- Amongst the combined interventions—IBT with NRT (₹27,532), Bupropion (₹11,166), and Varenicline (₹5,940), IBT with Varenicline offers cost effectiveness. Integrating these combinations into existing cessation services can significantly improve quit rates by addressing both behavioral and physiological aspects of tobacco addiction.
- The stated cost of implementation of interventions may be routed from the available and underutilized funds under the existing NTCP budget, ensuring no additional inputs costs while achieving sustainable beedi cessation.

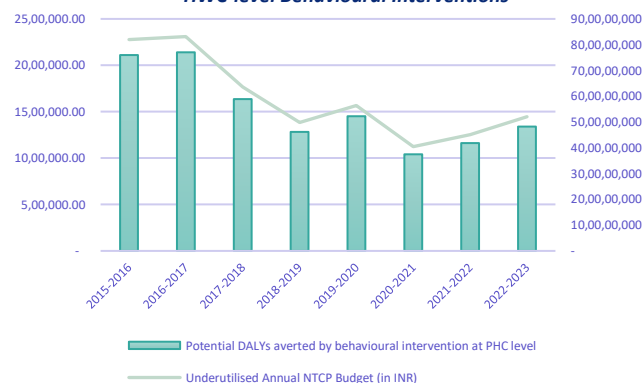
Available NTCP budget and its potential impact

Year-wise trends in annual unspent NTCP budget with foregone benefits in terms of potential DALYs averted through various interventions

Year	Underutilised Budget	Potential averted annual Disability Adjusted Life Years (DALYs)		
		Behavioural intervention at HWC level	Intensive behaviour therapy	Behaviour therapy with Varenicline
2015-2016	81,98,91,000.00	21,10,399.43	1,63,778.23	1,64,130.09
2016-2017	83,14,30,000.00	21,40,100.82	1,66,083.21	1,66,440.03
2017-2018	63,54,93,000.00	16,35,758.98	1,26,943.60	1,27,216.33
2018-2019	49,81,91,000.00	12,82,343.63	99,516.69	99,730.49
2019-2020	56,37,70,000.00	14,51,143.98	1,12,616.50	1,12,858.44
2020-2021	40,44,09,000.00	10,40,948.77	80,783.16	80,956.72
2021-2022	45,13,75,000.00	11,61,839.25	90,164.91	90,358.62
2022-2023	52,04,61,000.00	13,39,666.61	1,03,965.26	1,04,188.62

*Source for NTCP Budget: Government of India. (2023, July 28). Risk of tobacco consumption. Ministry of Health and Family Welfare, Lok Sabha

Impact of Underutilized NTCP Budget on Potential DALYs Averted through HWC-level Behavioural Interventions



Impact of Underutilized NTCP Budget on Potential DALYs Averted through IBT and IBT with varenicline

