

Community Engagement and Participation in Tobacco De-Addiction: A Pilot Study in Select Areas of Kamrup Rural District

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ABSTRACT

Background/Introduction

Tobacco use remains a leading preventable cause of death globally, with India ranking as the second-largest consumer and producer of tobacco. The northeast region, including Assam, bears a disproportionately high burden of tobacco-related morbidity, with unique socio-cultural practices (such as fermented areca nut use) further compounding the risk. Community engagement, particularly through front-line health workers (FLHWs) such as ASHAs and Anganwadi Workers (AWWs), offers a low-cost, contextually appropriate strategy for tobacco cessation. However, evidence from this region remains limited.

Methods

A community-based longitudinal pilot study was conducted among 200 tobacco-using adults (≥ 18 years) in selected areas of Kamrup Rural District, Assam. Participants were recruited through purposive sampling with ASHA/AWW assistance. A modified WHO-ASSIST Questionnaire 3.0 was administered at baseline and at 3-month follow-up. FLHWs were trained in the Ask–Advise–Check (AAC) approach and provided structured counselling over the follow-up period. Descriptive statistics, univariate and multivariate logistic regression, and ANOVA were used for analysis.

Results

Among 200 participants, the majority were females aged 35–55 years, homemakers (63.7%), with primary-level education (32.6%), and residing in joint families (73.1%). Multiple determinants of tobacco use were identified, including early initiation, peer influence, co-addiction with alcohol, stress, and socio-cultural acceptance. FLHWs uniformly performed the ‘Ask’ and ‘Advise’ components; however, only 87% carried out follow-up checking, and only 34% of those reported a positive response. Qualitative findings indicated improved cessation uptake following video-conferencing sessions led by AIIMS faculty. Social cost savings were reported qualitatively in households where de-addiction was achieved.

Conclusion

The AAC approach, delivered through trained FLHWs, is a feasible and low-cost strategy for tobacco de-addiction in rural community settings. Sustained reinforcement, family support, and reduced workload for FLHWs are critical enablers. A larger, adequately powered study is warranted to generate robust evidence for policy.

Keywords: tobacco cessation; community health workers; ASHAs; AAC approach; Kamrup district; smokeless tobacco

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I. Introduction

With over 8 million tobacco-related deaths annually, tobacco use remains one of the foremost global public health challenges, as highlighted by the World Health Organization (WHO).¹ Approximately 80% of these deaths occur in low- and middle-income countries (LMICs), regions that remain the principal targets of tobacco

industry marketing.² Second-hand smoke (SHS) exposure contributes an additional 1.2 million deaths per year. In India alone, tobacco accounts for nearly 1.35 million deaths annually, and the country ranks as the second-largest consumer and producer of tobacco globally.³

According to the Global Adult Tobacco Survey (GATS) 2016–17, the overall prevalence of smoking tobacco use is 10.38% and smokeless tobacco use is 21.38% in India, with an estimated 267 million tobacco users (aged ≥ 15 years). Overall, 28.6% of adults currently use tobacco in some form, comprising 42.4% of men and 14.2% of women.⁴ Tobacco is a shared risk factor for the four principal non-communicable disease (NCD) clusters: cardiovascular disease, chronic lung disease, cancer, and diabetes, and represents the single largest preventable cause of NCDs.⁵

The tobacco burden in northeast India, including Assam, is particularly complex. A fermented form of areca nut known locally as 'Tamol' is widely consumed and is associated with increased risk of oral and oesophageal cancer.⁷ The National Family Health Survey (NFHS-5) reports tobacco use prevalence of 22.1% among women and 51.8% among men in Assam.⁸ Paan (betel quid with tobacco) represents the most common form of smokeless tobacco use in the region, deeply embedded in socio-cultural norms.⁹ Given this cultural acceptance, public programmes alone are insufficient, and community engagement is essential to the success of any tobacco control initiative.¹⁰

Article 14 of the WHO Framework Convention on Tobacco Control (FCTC) and the WHO MPOWER initiative both underscore the need for accessible cessation support, particularly in LMICs.^{11/12} The National Tobacco Control Programme (NTCP) of India mandates the 5As model (Ask, Advise, Assess, Assist, Arrange) for tobacco cessation counselling across all healthcare settings.¹³ Front-line health workers (FLHWs) such as Accredited Social Health Activists (ASHAs) and Anganwadi Workers (AWWs) are uniquely positioned to extend cessation services to rural, low-income populations through their community-embedded roles.^{14/15} Evidence from India suggests that community health workers can effectively assess tobacco use and nicotine dependence in rural settings.¹⁶ Family support has also been consistently identified as a key enabler of successful cessation.¹⁸

Given the limited evidence from northeast India and the absence of prior similar pilot studies in this region, the present study was undertaken with the following objectives:

1. To assess the role of front-line health care workers (HCWs) in aiding tobacco cessation among the study population.
2. To train ASHAs and Anganwadi Workers in the Ask–Advise–Check (AAC) approach for tobacco cessation counselling.
3. To evaluate the social cost reduction following successful de-addiction.

II. Methods

Study Design and Setting

A community-based longitudinal study was conducted in selected semi urban areas of Jollah village of Kamrup Rural District, Assam, India. It is a non-municipality area having a PHC and an AAM. The village comprises of mostly geriatrics and unemployed youths. The Socio-economic status (SES) is mostly class II (Modified BG Prasad scale: 2025) and many do business. They depend on health care worker to avail health benefits and schemes. AIIMS Guwahati lies in close vicinity since 2023 which has affected their socio-behavioural patterns in healthcare and employment. There is one functional SHG working in the field of tobacco de-addiction in the studied community.

Participants

Apparently healthy individuals aged ≥ 18 years who were currently using tobacco and provided written informed consent were included. Exclusion criteria were: refusal to provide informed consent; no tobacco use in the preceding two months; and current enrolment in another de-addiction programme.

Sample Size

Since no comparable prior study was available from the region, a conservative estimate of prevalence ($P = 50\%$) was used. Applying Cochran's formula [$n = Z^2PQ/D^2$], with $Z = 1.96$ (95% CI), $P = 0.5$, $Q = 0.5$, and $D = 0.07$ (acceptable error), a minimum sample size of 196 was calculated, rounded to 200.

Sampling Technique

Participants were recruited through non-randomized purposive sampling. Tobacco-using individuals were identified through the assistance of local ASHAs and AWWs.

Data Collection Tool

A modified version of the WHO Alcohol, Smoking and Substance Involvement Screening Test (WHO-ASSIST Questionnaire 3.0), customised for the local setting, was used.¹⁹ This is an open-access, validated, and pre-tested tool endorsed by the WHO-FCTC Framework. Data were collected via a Google Form-based questionnaire, with the final data set collected at the Tobacco De-Addiction Clinic. Key informant interview (KII) was conducted among healthcare workers for holistic overview.

Intervention Protocol

The study was conducted in five sequential steps:

4. Step 1 – Obtaining written informed consent from each participant.
5. Step 2 – Administration of the modified WHO-ASSIST Questionnaire 3.0 along with a pre-designed, pre-tested socio-demographic questionnaire.
6. Step 3 – Structured counselling by trained FLHWs using the AAC (Ask–Advise–Check) approach.
7. Step 4 – Follow-up and reinforcement counselling over 3 months.
8. Step 5 – Re-assessment of addiction status using the WHO-ASSIST Questionnaire 3.0 at 3 months.

Statistical Analysis

Descriptive statistics were used for socio-demographic variables and tobacco addiction risk levels. Univariate and multivariate logistic regression analyses were performed to identify factors associated with successful de-addiction.

Ethics approval

Ethical approval was obtained from the Institutional Ethics Committee of All India Institute of Medical Sciences, Guwahati prior to commencement.

III. Results

Sociodemographic Profile

A total of 200 participants were enrolled. The majority were females aged 35–55 years. Regarding occupation, 63.7% were homemakers and 32.6% had primary-level education; however, approximately 80% of participants were literate. Most participants (73.1%) resided in joint families. Tobacco use was prevalent in every household surveyed; however, 43.7% reported significant family problems attributed to tobacco addiction. History of co-addiction with tobacco and alcohol was noted in 35.8% of households.

Determinants of Tobacco Use

Multiple interrelated factors were identified as contributors to tobacco use. These included initiation during youth, easy product availability, and witnessing tobacco use by family members. Co-addiction with alcohol, unemployment, problematic relationships, and psychosocial stress were reported across participant groups. Absence of social stigma and widespread societal acceptance of tobacco use in the region were prominent enabling factors. A notable qualitative finding was that some participants reported using smokeless tobacco to suppress hunger, reflecting an intersection between food insecurity and tobacco use behaviour.

Commercial determinants including surrogate advertising, absence of vendor licensing enforcement, and portrayal of tobacco use by media figures as a marker of masculinity or gender equality were additionally cited as promoting initiation and sustaining addiction in both male and female participants.

Role of Front-Line Health Workers in Tobacco Cessation

Qualitative analysis revealed that peripheral HCWs performed their routine duties, which nominally included tobacco cessation counselling (TCC) awareness activities; however, none recalled undertaking any dedicated additional TCC sessions prior to the study intervention. All HCWs reported that tobacco addiction was perceived as a socially accepted norm rather than a stigmatised behaviour within their communities.

All HCWs reported being overburdened with routine programme activities and expressed a lack of specific training or expertise in delivering targeted TCC interventions. Following structured video-conferencing sessions conducted by AIIMS Guwahati faculty, improved uptake of TCC advice was observed, and HCWs reported that consistent reinforcement enhanced community receptivity to cessation counselling. HCWs expressed interest in modular certification training in tobacco cessation.

Training of ASHAs and AWWs on the AAC Approach

All trained FLHWs performed the 'Ask' and 'Advise' components of the AAC approach. Minor resistance was encountered in two cases during the 'Ask' phase. The majority of participants engaged receptively

with information on the harms of tobacco, second-hand smoke, and third-hand smoke, as well as cessation strategies and referral pathways. Senior family members were additionally engaged as peer counsellors.

However, only 87% of FLHWs conducted follow-up 'Checking', and among those, only 34% reported a positive behavioural response. Reasons for non-compliance reported by families included: forgetting to relay advice, facing resistance from the tobacco user, perceived futility, or preferring intervention by a healthcare professional, with some requesting financial incentives for cessation.

Barriers to follow-up checking among FLHWs included increased workload, perceived futility of further engagement, anticipation of resistance that could jeopardise broader programme activities, and, in some instances, requests for performance-based incentives.

Social Cost Reduction Post De-Addiction

A formal quantitative cost analysis was beyond the scope of this pilot study. However, qualitative data indicated that households in which male members achieved cessation or significantly reduced tobacco use reported meaningful savings in household income, calculated on a per capita basis. Women in these households specifically reported improved financial stability and reduced domestic stress.

IV. Discussion

This pilot study explored the feasibility and outcomes of a community-based, FLHW-delivered AAC tobacco cessation intervention in rural Assam. The findings resonate with existing evidence on the central role of primary healthcare in tobacco control while highlighting region-specific challenges unique to northeast India.

Consistent with a study by Panda et al., nearly all ANMs and ASHAs routinely asked patients about tobacco habits ('Ask') and provided at least one-time counselling ('Advise').²⁰ The major gap identified in the present study was in the 'Check' (follow-up) component, with only 87% of FLHWs conducting follow-up and only a third reporting positive outcomes. This finding aligns with Panaitescu et al., who reported that primary care providers frequently fail to deliver complete cessation counselling due to time constraints, excessive workload, and inadequate training.²² Pahwa et al. further confirm that behavioural interventions, including counselling, represent one of the most cost-effective approaches to tobacco cessation in developing countries, with sustained reinforcement being key to success.²¹

The importance of family and peer support for cessation observed in this study echoes findings by Sreedevi et al. and Westmaas et al., both of whom identified social support as a significant determinant of cessation success.^{18/24} From an economic standpoint, qualitative evidence of social cost savings in de-addicted households is consistent with findings from Sindelar and O'Malley, who demonstrated that financial motivation may augment health-based messaging in improving quit rates.²⁵

Commercial determinants of tobacco use – including surrogate advertising, absence of vendor licensing regulation, and media normalisation – emerged as important structural barriers to cessation in the present study. These require policy-level interventions beyond community counselling strategies. The effectiveness of modular training programmes for FLHWs in tobacco cessation has been demonstrated by Goel et al., reinforcing the urgent need for structured, certified training pathways for ASHAs and AWWs in this domain.²⁶

V. Limitations

This study was a pilot conducted with a purposive sample and lacked randomisation, limiting the generalisability of findings. The absence of a comparison group precludes causal inference. Reliance on self-reported outcomes and a qualitative assessment of social cost savings are further limitations. The 3-month follow-up period may be insufficient to capture sustained cessation.

VI. Conclusion

The AAC (Ask–Advise–Check) approach, delivered through trained front-line health workers, is a feasible, low-cost, and context-appropriate strategy for community-based tobacco de-addiction in rural Assam. Positive reinforcement by ASHAs and AWWs, combined with family engagement, particularly the empowerment of mothers and female household members, yielded meaningful results at the household level. Sustained and consistent follow-up by FLHWs, adequate workload management, and targeted training in tobacco cessation are essential prerequisites for scaling this approach. Structural measures – including stricter enforcement of vendor licensing and curbing surrogate tobacco advertising – are equally necessary to create an enabling environment for

cessation. A larger, methodologically rigorous, adequately funded study with a representative community sample is warranted to generate evidence capable of informing national tobacco control policy.

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