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Adaptation Process of a Culturally Tailored Smoking Cessation Intervention for People living with Severe Mental Illness in South Asia: IMPACT 4S

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Abstract

Introduction: Despite high smoking prevalence in people living with Severe Mental Illness (SMI) from low- and middle-income countries, smoking cessation interventions adapted for this population and context are lacking. This paper describes the adaptation process of a smoking cessation intervention for people living with SMI in South Asia.

Methods: The adaptation process followed the first nine steps of the Escoffrey framework for adapting health interventions, complemented by the Stirman adaptation classification to document the modifications. This was conducted by an interdisciplinary co-design team comprising people with SMI, caregivers, experts in mental health, smoking cessation, and behavioural science from India, Pakistan and the UK. Stakeholders were consulted throughout. Evidence-based interventions were selected and contextual modifications to content and delivery identified. Staff were trained using online and face-to-face methods. Acceptability of the intervention was assessed through final consultations with community advisory panels.

Results: A UK intervention SCIMITAR+ was selected to be adapted, drawing on the TB & Tobacco and Smart Guide interventions from South Asia. Content and delivery adaptations focused on adding an additional "life after quitting" step, ensuring materials were understandable with culturally relevant examples and pictures, avoiding stigmatizing SMI, incorporating caregiver support, flexible scheduling of sessions alongside routine appointments, offering hybrid delivery and including female cessation advisors.

Conclusion: We systematically adapted a UK smoking cessation intervention for people living with SMI, tailoring it for implementation in India and Pakistan. The next steps (10 and 11 of the Escoffery framework) would be to implement and evaluate it in a pilot feasibility trial.

Keywords: Smoking; cessation; intervention; adaptation; cultural; severe mental illness; South Asia; IMPACT 4S.

Implications

In this paper, we describe the adaptation process for a smoking cessation intervention in South Asia for people living with SMI. The co-design team, involving people living with SMI, their caregivers, healthcare providers and experts in mental health, smoking cessation, and behavioural science, enhanced the intervention's relevance for the new target population.

There is still a significant gap in the literature explaining how such interventions are developed. This lack of detailed reporting hinders the ability to assess the appropriateness of adaptations and limits guidance for other initiatives. By addressing this gap, this paper aims to improve transparency and show how two adaptation frameworks (Escoffery adaptation framework, Stirman classification of adaptations) were used in low-resource settings, which can inform future adaptation and implementation efforts.

Introduction

People living with severe mental illness (SMI) (i.e. schizophrenia, bipolar disorder, other psychoses and severe depressive disorder) have a significantly shorter life expectancy than the general population[1]. Smoking is a significant contributor to this excess mortality[2,3]. Indeed, smoking prevalence is particularly high in people living with SMI and is estimated to be more than 50% in South Asian countries[4,5]. Smoking cessation interventions, encompassing behavioural and pharmacological support, can effectively address this health risk behaviour[6]. However, despite the high smoking prevalence in people living with SMI from low- and middle-income countries (LMICs), all the trial evidence comes from high-income countries (HICs)[7,8], where the evidence may not necessarily be applicable[9].

Directly translating evidence from HICs to LMICs is challenging due to variations in tobacco use patterns, types of tobacco products, cultural beliefs, perceptions, practices, healthcare systems, availability of pharmacotherapy, and regulatory approaches[10]. In South Asia, for example, interventions would need to take into account the high prevalence of smoking and smokeless tobacco use, diversity in the available products (i.e., cigarettes, bidis (hand-rolled unfiltered cigarettes), water pipes (hookah) etc. in terms of smoked tobacco), and the cultural specificity of the tobacco products[11,12]**.** This highlights the importance of developing interventions aligned with the local context, culture, and specific characteristics of the population to effectively address the issue at hand[13]. Adapting existing interventions is often considered the most cost-effective approach for developing interventions in a new setting[14]. Leveraging existing interventions that have shown effectiveness elsewhere allows for more efficient use of resources and builds upon established knowledge and experience. This approach enables the customisation of interventions to fit the unique needs, cultural context, and available resources of the new setting, increasing the likelihood of successful implementation and positive outcomes[15,16].

The objective of this paper is to describe the adaptation process of a smoking cessation intervention for people living with SMI in India and Pakistan, "**I**mproving **M**ental and **P**hysical **H**ealth **T**ogether-**S**moking cessation **S**upport for people with **S**MI in **S**outh Asia" (IMPACT 4S).

Methods

As shown in Figure 1 and Table 1, the process of adapting the IMPACT 4S intervention followed the initial nine (of 11) steps outlined in the Escoffery adaptation framework[17], which provides a structured approach for adapting evidence-based interventions to new contexts, ensuring cultural and contextual relevance. We also employed the Stirman adaptation classification[18] to systematically capture and analyze modifications.

[Insert figure 1 here]

Table 1. Steps and activities of IMPACT 4S intervention adaptation (in here)

The intervention adaptation was conducted by an interdisciplinary co-design team comprising people living with SMI and their caregivers, experts in mental health, smoking cessation, behavioural science, and epidemiologists from India, Pakistan and the UK (see Supplementary Material 1). Supported by community advisory panels (CAPs), an expert panel, and the IMPACT Advisory Board, we used a mixed-methods approach to obtain information to guide the adaptation throughout.

Assess the community (Step 1)

First, we conducted a community and health needs assessment to understand the behavioural determinants and risk factors related to smoking among people living with SMI in South Asia, and to assess organizational capacity to implement the IMPACT 4S intervention. We used four sources of information: 1) a review of existing literature on smoking patterns and behaviours among people living with SMI in South Asia; 2) expert consultations: discussions with 5-10 psychiatrists in each country with significant experience of working in smoking cessation services and with people living with SMI; 3) we established two CAPs, one in Bangalore, India, and another in Rawalpindi, Pakistan. Each panel included people living with SMI, their caregivers, representatives from social welfare departments, relevant non-governmental organisations, community advocacy groups, and psychologists (16 members in Bangalore, 14 in Rawalpindi); 4) situation analysis at the study sites, the National Institute of Mental Health and Neurosciences (NIMHANS) in India and the Institute of Psychiatry (IOP) in Pakistan: examination of medical records to assess the prevalence of outpatients who smoked.

Additionally, we reviewed/analysed protocols at both institutions to understand how individuals who smoke were identified and how smoking cessation advice and support were offered. Furthermore, we consulted with their psychiatrists (five at NIMHANS, seven at IOP) to assess the availability of smoking cessation services (including pharmacological treatment) and the willingness and challenges to incorporate standardised smoking cessation services.

Understand the intervention (Step 2)

We set out to conduct a rapid review of reviews to identify Evidence-Based Interventions (EBIs) for smoking cessation with people living with SMI in South Asia (see Supplementary Material 2 for the search strategy). However, we found no relevant studies[9], instead identifying four reviews of smoking cessation interventions in people living with SMI in HICs [6,19–21] and a systematic review of smoking cessation interventions in LMICs including four randomised controlled trials from South Asia[22]. The expert panel was also approached to identify EBIs for review. We synthesised this literature on EBI effectiveness, their core elements and underpinning behaviour change theory.

Select the intervention (Step 3)

To select the EBI for adaptation, the co-design team met in an online workshop and systematically discussed the evidence from Step 2. Effectiveness and "fit" to our target population (people living with SMI) and context (South Asia) were key considerations in the selection. At this time, the goal (impact), short-term (mechanisms of action) and medium-term (behaviour) outcomes of the IMPACT 4S intervention were agreed.

Consulting the experts and stakeholders, then deciding what to adapt (Steps 4- 6)

Six fortnightly online workshops with the co-design team were held to decide what to adapt, (supported by the expert panel, CAPs and IMPACT Advisory Board). First, the details of the three selected EBIs (SCIMITAR+[23], TB & Tobacco[24] and Smart Guide[25]) were recorded: target population, intervention delivery setting and general characteristics). This document highlighted similarities and differences between the EBIs and was used throughout steps 6 and 7 (see Supplementary material 3). Next, a mapping exercise was undertaken to align the SCIMITAR+[23] activities and ingredients with behaviour change techniques (BCTs)[26] and mechanisms of action (MoAs)[27]. Working together over several meetings, the expert panel

and co-design team ranked and voted on activities and ingredients (with corresponding BCTs/MoAs) based on their potential to maximise positive outcomes, as well as relevance and feasibility for the South Asian context. Voting was followed by facilitated discussions to explore differing perspectives, resolve disagreements, and finalize decisions on what to retain, adapt, or remove. The initial logic model was developed.

The final online meetings focused on discussing adaptations for the content (activities, ingredients, materials) and delivery (session length, timings etc) to be relevant and feasible for people living with SMI in India and Pakistan. No formal consensus process was used. The CAPs and IMPACT Advisory Board were also consulted. Their focus at this stage was at a general level in terms of language and cultural context.

Making the adaptations (Step 7)

The co-design team drafted the agreed adaptations to SCIMITAR+[23], retaining its essential components while tailoring them to the new context. We used the Stirman adaptation classification[18] to systematically map and categorize these changes. The initial logic model was reviewed for potential updates.

Specifically, the intervention manual, interactive activity booklets, client information and planning sheets for Cut-Down To Quit (CDTQ) were adapted from the manual, participant support pack and CDTQ sheets of SCIMITAR+[23]. The concept of 'Life after quitting" was sourced from the Smart Guide[25], while the idea of flipbooks was taken from TB & Tobacco[24]. The adaptations were initially made in English and then translated into Hindi and Kannada for India and Urdu for Pakistan by bilingual cultural anthropologists and psychologists who were native speakers with substantial experience of communicating with people living with SMI. Bilingual experts back-translated random samples of the materials into English.

Ongoing review and updates of the client-facing resources took place within the co-design team. Voting with a show of hands was used (and recorded) to gather feedback on 10 criteria, including ease of understanding and flow (text and pictures), language fluency, clarity, relevance, culturally appropriate terminology (avoiding stigmatising SMI) and completeness.

The CAPs and expert panel guided us on how to refine the materials to enable hybrid delivery[28].

Train the staff (Step 8)

Four cessation advisors in each country (psychiatric social work postgraduates at NIMHANS, psychologists at IOP) were trained in delivering the intervention using the adapted materials.

Test the adapted material (Step 9)

At this stage, the intervention materials were tested for acceptability with the CAPs, who observed role-plays of intervention delivery, followed by discussion about the relevance of the materials, cultural appropriateness, and ease of understanding.

Results

This section presents the outcomes at each step of the adaptation process.

Assess the community (Step 1)

The literature on the behavioural determinants and risk factors among people living with SMI in South Asia was limited, with a predominant focus on Schizophrenia[4,5,29,30]. A study conducted in India highlighted significant predictors of tobacco use in people living with SMI, including male gender, advanced age, diagnosis of bipolar disorder, low literacy, and concurrent substance use[29]. Common forms of smoking in India and Pakistan were cigarettes, hookah, sheesha, and bidi[31]. While there was limited information on quitting patterns and relapses among people living with SMI, studies indicated that motivation to quit smoking was similar to that of the general population[32,33]. We also found that abrupt quitting or sudden cessation of smoking may pose significant challenges.

Discussions with the psychiatrists confirmed the smoking behaviours and patterns identified in the literature. However, psychiatrists highlighted that whilst people living with SMI were motivated to quit, they were more likely to fail due to social, environmental and mental illness-related factors. They emphasised the importance of harnessing social support from the family system. The CAP consultations showed similar perspectives and identified an additional barrier to quitting, namely, low mood and motivation amongst people living with SMI.

In assessing organizational capacity, we learnt that 20-30% of new patients living with SMI at NIMHANS and IOP were smokers. At NIMHANS, smoking cessation support comprised brief advice, nicotine replacement therapy (NRT), and referral to the tobacco cessation clinic. At IOP, brief advice was more ad hoc, and prescription pharmacotherapies were not available as they were expensive. Both organizations were motivated to enhance their cessation support services and confident they had the infrastructure, resources (except for needing carbon monoxide (CO) monitors), and staff to deliver cessation interventions.

Understand the intervention (Step 2)

Across the four reviews of smoking cessation interventions in HICs[6,19–21], there was consistent evidence that pharmacological interventions—particularly varenicline, bupropion, and nicotine replacement therapy (NRT)—are effective in supporting smoking cessation among people with SMI, with varenicline and bupropion showing the strongest effects. Most studies found no significant increase in adverse psychiatric symptoms, suggesting that these treatments are generally safe for this population. The interventions typically combined pharmacotherapy with behavioural components, such as individual or group counselling, motivational interviewing, or cognitive behavioural therapy (CBT), although the format and intensity varied. While not always explicitly stated, the behavioural elements of these interventions appear grounded in cognitive behavioural theory and motivational enhancement frameworks, supporting behaviour change through structured support and individual motivation. The theoretical underpinnings were not consistently described.

The systematic review evaluating cessation strategies in the general population in LMICs[22] found that NRT, behavioural counselling, and brief advice were all effective in increasing smoking cessation rates compared to placebo, minimal intervention, or usual care. NRT showed a pooled odds ratio (OR) of 1.76, behavioural counselling of 6.87, and brief advice of 2.46. Interventions included pharmacotherapy (NRT, bupropion, varenicline, and others), individual or group behavioural counselling, brief advice, and one mobile phone-based programme. While many studies incorporated elements of CBT, the underlying theoretical foundations were inconsistently described. Of the four South Asian studies, all reported positive effects on smoking cessation outcomes. Interventions included motivational

interviewing in Indian prisons, brief advice in Pakistani primary care, a multi-component behavioural programme in Indian workplaces, and a mobile phone–based intervention in Bangladesh.

The expert panel identified two relevant EBIs for individuals with tuberculosis (TB & Tobacco), and the general population (Smart Guide)[24,25]. TB & Tobacco, designed for individuals receiving tuberculosis treatment in Bangladesh and Pakistan, integrates brief advice, behavioural counselling, and pharmacotherapy, and demonstrated increased quit rates when delivered by trained healthcare providers as part of routine care[34]. The Smart Guide targets the general population in India[25], incorporating motivational messages, self-help tools, and relapse prevention strategies. While formal evaluations are not available, clinician experiences have been positive, and the intervention continues to be used in India as a low-cost, scalable support tool for smoking cessation.

Select the EBI (Step 3)

The co-design team selected SCIMITAR+[23] as the foundation for adaptation (providing the intervention structure). Tested in the largest RCT to date, SCIMITAR+[23] demonstrated effectiveness in the UK for people living with SMI and offered a comprehensive and theoretically underpinned approach addressing both behavioural and pharmacological aspects of smoking cessation[35]. To inform tailoring of the adapted intervention for the South Asia context, the two EBIs that had been delivered in Bangladesh, Pakistan and India (TB & Tobacco, Smart Guide[24,25]) were retained. All three EBIs were co-developed by members of the expert panel, thus allowing for additional (unpublished) reflections to be harnessed.

The long-term goal (impact) of the IMPACT 4S intervention was to reduce mortality and morbidity resulting from non-communicable diseases (NCDs) associated with smoking, such as cardiovascular disease, chronic obstructive pulmonary disease (COPD) and cancer, among individuals living with SMI in South Asia. The medium and short-term objectives were to reduce smoking and positively change mechanisms of action, e.g. beliefs about capabilities, knowledge, respectively. These were the foundation for developing an initial logic model (in Step 6) to guide the intervention's implementation and subsequent evaluation.

Consulting the experts and stakeholders, then deciding what to adapt (Steps 4-6)

Based on the work done in the online meetings to achieve consensus, an initial logic model was developed to visually represent the retained SCIMITAR+[23] steps, activities, ingredients and corresponding BCTs and MoA (see Table 2). The key decision was to add an additional step "life after quitting" with the aim of maintaining motivation and preventing relapse.

Table 2. IMPACT 4S logic model (in here)

Using the documented similarities and differences between the EBIs (Supplementary material 3), the co-design team, supported by the CAPs and IMPACT Advisory Board, identified several key adaptations needed for the new intervention. These included ensuring the materials were suitable for individuals with low literacy levels, integrating culturally relevant examples and illustrations, avoiding stigmatizing SMI, incorporating family support, scheduling sessions in conjunction with regular healthcare visits to mental health institutions, including female cessation advisors to encourage female smokers' participation, and exploring the possibility of hybrid delivery of the intervention.

Making the adaptations (Step 7)

The initial logic model (Table 2) did not change after making the adaptations. The adapted materials were 1) a manual for cessation advisors; 2) five flipbooks (tailored to men and women in India and Pakistan); 3) client information sheets; 4) information sheet and planning sheet for those opting for CD2Q; 5) advisor's notebook for each client, to record details of the sessions; 6) brief advice leaflet; and 7) CO monitoring and feedback materials.

Supplementary material 4 presents the adaptations made to the content and delivery of SCIMITAR+[23]. Content changes focused on using simple local language, replacing text with culturally relevant pictures e.g. different smoking products across countries, avoiding potentially stigmatizing language and including CO monitoring with feedback. Delivery changes included adding an additional (post-quit step), ensuring choice of male/female advisors, being flexible on the number and scheduling of sessions to suit individual needs, moving to hybrid delivery where required, reducing session length and actively encouraging participation of caregivers.

Train the staff (Step 8)

There were three parts to the training. First, the staff completed a UK online (approx. 20-days self-paced) smoking cessation training programme[36] including practical role-playing exercises, pre- and post-assessments on core knowledge and skills to become National Centre for Smoking Cessation and Training (NCSCT) Certified Stop Smoking Practitioners. They also attended a NCSCT module in 'Mental Health and Smoking Cessation'. Members of the expert panel, with extensive experience in smoking cessation services in the UK and South Asia, then led a one-day online training and question-and-answer session on applying this course to IMPACT 4S intervention delivery. This was followed by five two-hour face-to-face mock delivery sessions, one for each flip book, with feedback (but no formal assessment).

Test the adapted material (Step 9)

Feedback from the CAPs revealed that the language, visuals, and content of the adapted materials were appropriate. Key suggestions, such as simplifying certain messages and enhancing illustrations, particularly in explaining different types of tobacco products, were incorporated into the final materials.

Discussion

This paper describes a nine-step process of adapting a smoking cessation intervention for people living with SMI in South Asia (IMPACT-4S). The steps taken were informed by steps 1-9 of the Escoffery framework[17], combined with Stirman's classification framework[18]. In the first step, we found that smoking among people with SMI in South Asia is a major problem, and while people with SMI are often motivated to quit, there are social, environmental and individual barriers. The sites within which IMPACT 4S would be implemented (NIMHANS and IOP), a high proportion of their service users (20-30%) were smokers, and the staff were motivated to enhance their smoking cessation services. A review of the literature revealed no known smoking cessation interventions specifically for people living with SMI in South Asia. The UK intervention SCIMITAR+[23] was selected to be adapted, drawing on the TB & Tobacco and Smart Guide interventions from South Asia[24,25]. Content and delivery adaptations focused on adding an additional "life after quitting" step, ensuring materials were understandable with

culturally relevant examples and pictures, avoiding stigmatizing SMI, incorporating caregiver support, flexible scheduling of sessions alongside routine appointments, offering hybrid delivery and a choice of male/female cessation advisor.

While there are several frameworks for intervention development[37], few studies provide a detailed description of the steps taken. A paper by some co-authors describes in detail the steps to adapting a culturally appropriate psychological intervention in South Asia[37]. Together with our work, these papers fill a gap in the literature as to how intervention development frameworks can be applied in practice, particularly in low-resource settings. We found the Escoffery framework[17] useful, and that it could be complemented by Stirman's classification framework[18]. By following a comprehensive process and engaging with professional and community stakeholders we hoped to enhance the adapted intervention's potential acceptability, feasibility, and effectiveness[38]. While the steps are described as linear, in practice, the Escoffery framework was applied somewhat flexibly, with the team being pragmatic in its decisions. For example, three EBIs informed the adaptation (not one), and stakeholder engagement occurred across multiple steps rather than only steps 4 and 5. We believe this flexible application is a strength and demonstrates how it may be transferable across contexts.

Integral to the intervention adaptation were the involvement of an expert panel and community members. The expert panel was particularly important in agreeing the structure and theoretical underpinning of the intervention, whilst the CAPs were invaluable to ensure the intervention's acceptability. Indeed, they brought understanding of the social and emotional support needs of people living with SMI. Their emphasis on the critical role of support from family, friends and clinicians in smoking cessation is similar to other studies of people with SMI[39,40]. CAP feedback ensured that language and illustrations were understandable, appropriate and avoided stigma. Including illustrations to address the lower literacy levels within the population constitutes one of the most frequently observed adaptations when transitioning interventions from HICs to LMICs[41] and has improved health interventions' acceptability, reach, adoption, and effectiveness[42].

In terms of key adaptations, we added a fourth step, "life after quitting" taken from the Smart Guide[25], to provide ongoing behavioural counselling and self-help resources to reduce the risk of relapse in this vulnerable SMI population. Evidence for this continued approach comes from cessation interventions for the general population[43,44]. Therefore, investigating this continued support after quitting for maintaining long-term remission in people living with SMI is important. We retained used mental health professionals as the cessation advisors given their experience of working with people living with SMI, contributing to better supporting their quit attempts and reducing feelings of stigma[45]. The adaptation was to ensure the choice of male/female advisors to align with gender norms in some South Asian countries. Involving caregivers can contribute to the success of behaviour change interventions[46]. Moreover, people living with SMI frequently rely on a primary caregiver, especially within this socio-cultural context, where family members play a pivotal role in addressing health care requirements[47].

The IMPACT 4S intervention has since been implemented in the two study sites and evaluated in a pilot feasibility trial (steps 10 and 11 of the Escoffery framework[17]), with encouraging preliminary findings (manuscript in preparation). Whilst its effectiveness can only be established through a full RCT, the adaptation and pilot testing has important implications for policy and practice. In the short term, considering almost 50% of SMI patients are not asked about tobacco use and approximately 90% are not provided any assistance for cessation[48] the manualized intervention has already built awareness and capacity amongst mental health practitioners at NIMHANs and IOP. Adapting the IMPACT 4S intervention for hybrid delivery can increase access to such a service and may be necessary in the context of further pandemics. Furthermore it aligns with current priorities in India particularly as there has been a push for tele-mental health services (Tel-MANAS)[49]. Should the intervention be implemented and scaled up the challenges of resource-constrained services will have to be considered. Establishing successful implementation (including non-tertiary settings) and cost-effectiveness becomes crucial for the scalability of the intervention delivery through the national mental health and tobacco control programmes. The thorough and systematic steps described in this paper, involving experts in experience and practice, we hope, make the IMPACT 4S intervention robust and suitable for further testing and delivery in similar settings.

Conclusion

We systematically adapted a smoking cessation intervention for people living with SMI, tailoring it for implementation in India and Pakistan. The adaptation process was guided by Escoffery framework[17], combined with Stirman's classification[18] ensuring a comprehensive integration of cultural and contextual components. Throughout, a broad range of stakeholders was actively engaged to ensure acceptability. The detailed account presented here holds the potential to steer the cultural adaptation of future health interventions in low-resource settings.

Declaration of Interests

The authors declare that they have no known competing financial or personal interests that could have appeared to influence the work reported in this paper.

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Ethical Considerations

The study has been approved by the University of York's Health Sciences Research Governance Committee (Reference number: HSRGC/2019/346/D); Health Ministry Screening Committee, India; the Ethics Committee, Behavioural Sciences Division (Reference number: 2019-7975), NIMHANS, Bangalore, India; National Bioethics Committee Pakistan (Reference number: 4-87/NBC-434/19/1491) and; Institutional Research and Ethics Forum (R-48/RMU) of Rawalpindi Medical University, Pakistan.

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Figure 1. Escoffery adaptation framework

Alt text: Figure 1 presents the Escoffery Adaptation Framework as a horizontal sequence of nine connected blue-bordered ovals, each representing a step in the adaptation process: (1) Assess the Community, (2) Understand Intervention, (3) Select the Intervention, (4) Consult with Experts, (5) Consult with Stakeholders, (6) Decide What Needs Adaptation, (7) Adapt the Original Intervention, (8) Train the Staff, and (9) Test the Adapted Material. The diagram visually outlines a systematic, step-by-step approach to adapting interventions for new settings.