

# Exploring New Avenues for Prevention of Non-Communicable Diseases by Involving Non-Health Sector Professionals in Early Detection

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## Abstract

**Background:** Non-Communicable Diseases (NCDs) are the leading cause of mortality globally, accounting for around 71% of all deaths (~41 million annually). India faces a particularly high NCD burden, with the share of NCD-related deaths rising from 37.9% in 1990 to 61.8% in 2016. The National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPNC) was launched in 2010 to strengthen infrastructure and promote health awareness, early diagnosis, management and referral for NCDs. Despite these efforts, gaps persist in early identification of cases due to workforce shortages and limited community awareness.

**Objective:** This paper proposes a novel approach to augment NCD early detection by engaging non-health sector professionals (e.g. beauticians, fitness trainers, teachers, drivers) as community sentinels, in alignment with NPNC. **Methods/Approach:** We conducted a narrative review of literature and national program frameworks and developed a conceptual framework for integrating trained non-health professionals into NCD prevention efforts. Key components - training modules, ethical safeguards, referral pathways, and implementation steps - were formulated based on identified best practices and stakeholder guidelines.

**Findings:** We present a logical input-process-output-outcome framework (community professionals → training → detection/referral → verification → feedback → improved NCD outcomes) and an implementation model aligned with NPNC objectives. Non-health professionals in everyday contact with the public can spot red-flag signs of NCDs (e.g. skin changes, exercise intolerance, behavioral shifts) and refer clients via a dedicated NCD helpline for confirmation. A structured training curriculum (covering NCD basics, symptom recognition, communication, ethics, and referral procedure) is proposed, along with periodic refreshers. We outline ethical safeguards (confidentiality, informed consent, data privacy, conflict of interest management) to guide these interactions. A pilot-to-scale implementation plan is detailed with timelines, performance indicators (e.g. referral accuracy, yield of confirmed diagnoses), and provisions for operational research on feasibility and cost-effectiveness.

**Keywords:** Non-Communicable Diseases; NPNC; early detection; community engagement; non-healthcare professionals; prevention

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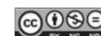
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## Introduction

Non-communicable diseases (NCDs) now account for 71% of global deaths, with low- and middle-income countries most affected. India reflects this trend, where NCDs cause over 61% of deaths, driven by cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes all linked to modifiable risks such as poor diet, inactivity, tobacco, and alcohol use. To address this, the Government of India launched the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPNCDC) to strengthen health promotion, screening, early diagnosis, and management through district NCD clinics and Health and Wellness Centres [1].

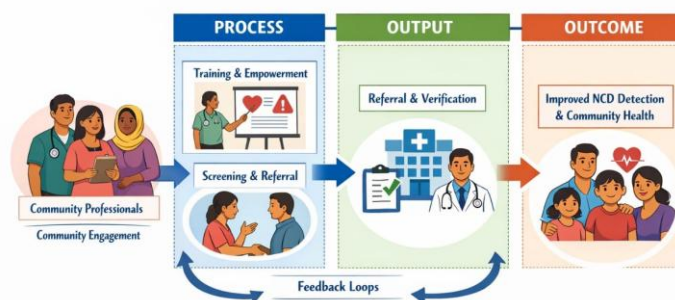
Despite progress, major gaps persist: inadequate frontline workforce, challenges in identifying high-risk individuals, and low community awareness lead to delayed detection. While ASHAs and other health workers conduct screenings, the scale and silent nature of NCDs mean many cases remain unnoticed. There is significant untapped potential in involving non-health professionals who interact closely with communities and can spot early warning signs. This paper proposes a framework integrating such professionals into NCD detection pathways, aligned with NPNCDC goals of community engagement and strengthened referral systems. It outlines the conceptual model, required training, ethical safeguards, and a roadmap for scalable, sustainable implementation [1].

### Conceptual Framework

Figure 1: Conceptual framework illustrating the proposed input-process-output-outcome pathway. Community professionals (input) are trained and empowered (process) to detect NCD red-flag signs and facilitate referrals, which are verified by the health system (output), followed by feedback loops that reinforce the process. The ultimate outcome is improved NCD detection and health outcomes in the community. This framework is designed to integrate with NPNCDC objectives of community-based prevention, screening and referral. The steps correspond to NPNCDC

strategies: community engagement in prevention, capacity building (training), screening & referral for early diagnosis, confirmation and management at appropriate facilities, and continuous follow-up [2].

Figure 1: Conceptual Framework Illustrating the Input–Process–Output–Outcome Pathway



### Roles of Non-Health Professionals in Early NCD Detection

Non-health professionals often can observe early warning signs of NCDs during their interactions with individuals. For instance, hairdressers and beauticians might observe unusual hair loss or skin changes that could signal thyroid issues [3] or melanoma. They also can observe yellowing of the eyes indicating jaundice a common manifestation of liver disease [4], pale eyes (pallor) indication for anemia and tell/advise their clients to seek medical help.

A study suggested that hair dressers have successfully delivered NCD prevention programmes, particularly for African-American women in disadvantaged areas. [4] Regarding settings-based approach, salons are ideally situated to support health promotion efforts. The study highlighted that the key priorities for a partnership between salons and GP surgeries include promoting cardiovascular disease prevention through lifestyle changes and health check uptake, increasing awareness of breast cancer screening, and addressing issues of equity [5-7]. Massage therapists might identify swelling or persistent headache suggestive of circulatory issues or chronic muscle tension related to hypertension [8] and they may suggest for medical help. Personal trainers and fitness instructors can notice exercise intolerance, hinting at early onset heart disease [9] or unusual fatigue that could indicate anemia or pre diabetes/diabetes which needs medical attention. They may

see postural issues or chronic pain indicative of musculoskeletal disorders or osteoarthritis. Teachers and educators might recognize significant behavioural changes or physical symptoms in students as potential signs of mental health issues or chronic conditions [10]. Teachers and educators play a vital role in detecting, preventing, and managing mental health issues through early interventions. A meta-analysis conducted to improve school mental health programs aimed to assess the impact of implementing social-emotional learning (SEL) programs on both mental health promotion and academic performance. The study found that schools incorporating SEL programs saw an 11-17 percentile improvement in standardized test scores compared to those without such interventions, underscoring the academic benefits of mental health promotion [11].

Additionally, chefs and wait staff might detect patterns in dietary/calorie restrictions or unusual eating habits that could point to food allergies or eating disorders or inflammatory bowel disease. Additionally, they can act as a change agent to motivate people to take foods with less calorie, which is a risk factor for multiple NCDs. A survey was conducted among chefs attending culinary meetings in the US to explore strategies for creating reduced-calorie foods and opportunities for incorporating such items into restaurant menus. It was found that almost all chefs (93%) believed that the calorie content of menu items could be decreased by 10- 25% without customers noticing [12].

Manicurists and pedicurists can observe nail discoloration or changes in nail thickness, which can indicate anemia or fungal infections (dermatophytes) or even heart disease (rheumatic heart disease/congenital heart disease) [13]. Even drivers, such as taxi or rideshare drivers, can notice excessive drowsiness or frequent trips to the restroom in passengers, which may hint at sleep apnea or diabetes or chronic alcohol intake [14]. A barber can indicate a potential issue with insulin resistance by noticing a dark velvety line (acanthosis nigricans) at the nape of the neck, by observing white patches they can indicate fungal infection of scalp or eczema or seborrheic dermatitis [15]. Similarly, a tailor can point out significant weight changes, hinting at obesity or weight loss, through sudden alterations in measurements.

Now, the two most important aspects are the information channel and the reward system. Once a non-healthcare

professional detects a red flag sign, they need to inform both the individual and the health department through a free helpline, similar to the ones used for HIV or TB, to ensure that appropriate actions—such as screening, diagnosis, and treatment are taken. Additionally, similar to ASHA workers, we can offer incentives to these professionals when an NCD is diagnosed as a result of their efforts. In research, project titled-North Carolina BEAUTY and Health Project studied 10 beauty salons to understand conversations between cosmetologists and customers and assess salon features for health promotion. They found salons are social spaces where health topics are discussed openly. Features like healthy snacks, smoking restrictions, and health-related materials can support health promotion. The study suggests training cosmetologists to deliver health messages based on these insights [16].

### **Training Module for Community Professionals**

Comprehensive training is the cornerstone of this initiative, ensuring that non-health professionals can capably and confidently fulfil their supportive role in NCD prevention. We propose a structured training module that covers the essential knowledge and skills, delivered through interactive workshops and practical sessions. (Table-1) The training is designed to be short-term but intensive for example, a 2-day workshop (approximately 15-20 hours) to make it feasible for working professionals to attend, followed by periodic refreshers. Training objectives are clearly defined: by the end, participants should be able to recognize common NCD warning signs, communicate health concerns to clients in a sensitive and ethical manner, understand the referral process (including how to use the helpline or referral forms), and appreciate their role boundaries (when to refer to medical professionals). All technical and medical content is distilled into practical guidance suitable for laypersons, avoiding jargon.

Regular refresher training (initially at 3 months, then every 6 months) will reinforce key concepts, update participants on new guidelines, and provide a space for sharing field experiences. Short 1-day sessions, along with periodic newsletters or mobile tips, will help maintain motivation and knowledge.

**Table 1.** Proposed Training Module for Non-Health Community Professionals in Early NCD Detection

Training Domain	Key Components	Learning Outcomes	Mode of Delivery
Introduction to NCDs	Basic overview of major NCDs (CVD, diabetes, cancer, chronic respiratory diseases); risk factors	Understand common NCDs and their public health importance	Interactive lectures
Recognition of Red-Flag Signs	Visual, behavioural, and functional warning signs (e.g. pallor, jaundice, exercise intolerance, acanthosis nigricans)	Identify early signs warranting referral	Demonstrations, case vignettes
Communication Skills	Non-alarming, respectful conversation; motivational prompting	Communicate concerns ethically without diagnosis	Role-play, group discussion
Referral Pathway	Use of NCD helpline; referral forms; linkage to HWCs/NCD clinics	Facilitate timely referral to health system	Practical exercises
Ethics and Role Boundaries	Confidentiality, consent, non-diagnostic role, conflict of interest	Practice ethically and within defined limits	Guided discussion
Documentation & Feedback	Minimal data capture; receiving feedback from health system	Reinforce learning through feedback loops	Job aids, WhatsApp groups

Training will be delivered by healthcare staff and trained educators using interactive methods such as discussions, demonstrations, and role-play. Participants will receive standardized materials, including a quick-reference booklet, with the curriculum adapted to local languages to ensure consistent, high-quality instruction nationwide.

Upon completing the training, participants will be given job aids such as wallet cards or posters to keep at their workplace for reference—for example, a small chart of “NCD signs to remember” that can be glanced at discreetly. Moreover, trainees will be enrolled into a communication network (like a WhatsApp group or regular meetings with the local health officer) to allow continued mentorship and the sharing of experiences or new information. By investing in thorough training and ongoing support, the program aims to ensure that these community professionals perform their role accurately, confidently, and ethically, thereby truly extending the reach of the health system into everyday social spaces. Strong ethical safeguards are crucial when involving non-health professionals in health-related roles.

The program prioritizes confidentiality, consent, data protection, and the prevention of conflicts of interest. Participants follow a defined code of conduct to ensure privacy and responsible practice. Confidentiality is strictly enforced: any health observation must be shared only with the individual or authorized health staff. Breaches undermine trust and result in corrective action. Informed consent is required before making referrals or sharing information, with only minimal data collected in line with legal privacy requirements; exceptions apply only in emergencies or for legally notifiable conditions. Data misuse is actively prevented. Professionals provide limited information to a secure helpline system and must not retain or use health details for personal or commercial gain. Likewise, conflicts of interest are avoided—participants must not diagnose, prescribe, or leverage concerns to promote business, and incentives are designed to discourage over-referral. Accountability is maintained through signed ethical pledges, routine supervisor reviews, and anonymous channels for reporting concerns. These safeguards protect individuals’ rights and support ethical, community-based participation in

early NCD detection.

These do's and don'ts (Table-2) will be visibly posted at training venues and included in the reference booklet for continual reminder. By adhering to these guidelines,

community professionals will act as ethical extensions of the healthcare team, thereby ensuring the program's credibility and sustainability. The implementation plan has been described in the Table-3.

**Table 2.** Ethical Do's and Don'ts for Non-Health Professionals Involved in NCD Detection

Domain	Do's	Don'ts
Confidentiality	Share observations only with the individual or authorized health staff	Discuss health issues publicly or with colleagues
Consent	Obtain verbal consent before referral or information sharing	Refer without informing the individual
Role Clarity	Act as observer and referrer only	Diagnose, prescribe, or provide medical advice
Data Handling	Share minimal required information via secure systems	Store, sell, or reuse personal health data
Incentives	Accept incentives only for confirmed cases via program rules	Over-refer for financial or business gain
Professional Conduct	Maintain respectful, non-judgmental interaction	Use fear, stigma, or coercion

**Table 3.** Phased Implementation Plan Aligned with NPNCD

Phase	Key Activities	Timeline	Monitoring Indicators
Planning	Stakeholder engagement; curriculum development; helpline linkage	0–3 months	Training materials finalized
Pilot	Training selected professionals; test referral system	4–9 months	Number trained; referrals generated
Evaluation	Assess referral accuracy; feasibility; acceptability	10–12 months	% confirmed NCDs; feedback quality
Scale-up	Expand to additional districts; integrate with HWCs	1–3 years	Coverage; referral yield
Sustainability	Refreshers; supervision; incentive optimization	Ongoing	Retention; cost-effectiveness

### Advantages of Involving Non-Health Professionals

Leveraging non-health professionals for NCD prevention offers numerous advantages that strengthen and complement the healthcare system's efforts. Firstly, these community professionals provide an extended reach for early detection. They interact with segments of the population that doctors or ASHAs might not frequently see - including relatively healthy adults who don't regularly visit

clinics. By observing people in their natural environments and daily routines, they can catch subtle changes that “may go unnoticed in routine medical check-ups”. This early warning system can lead to diagnoses at earlier stages of disease, when interventions are more effective and less costly. Early detection of diabetes or hypertension, for example, allows prompt management that can prevent serious complications like kidney failure or heart attacks.

Another advantage is the high level of trust and rapport these professionals often have with individuals. Clients might feel more at ease discussing their health informally with a familiar barber or teacher than in a formal clinical setting. This can facilitate more open conversations about symptoms or barriers to seeking care. In turn, the gentle nudge from a trusted community member can be a powerful motivator for someone to actually go and get a health check-up. The barber-shop hypertension trials demonstrated that involving a “trusted community member” significantly improved patient engagement and outcomes. In our context, when a tailor or coach (with whom the person has a longstanding relationship) expresses concern for their health, it personalizes the message and often spurs action.

By integrating health awareness into everyday social interactions, this approach also normalizes conversations about health and NCD risk factors. It helps diffuse health knowledge more broadly - a beautician chatting about the importance of sunscreen (to prevent skin cancer) or a gym instructor stressing not to ignore chest pain have ripple effects on community awareness. Over time, such repeated messaging can cultivate a culture of preventive health behaviour in the community. Non-health professionals can reinforce healthy habits and serve as role models; for instance, a sports coach advocating for a tobacco-free lifestyle or a chef offering low-salt meal options adds to the momentum of public health campaigns.

From a health systems perspective, involving these additional human resources is a form of task-sharing that eases the burden on overstretched medical staff. It's a cost-effective way to extend screening coverage without hiring large numbers of new health workers. The formal health workforce (doctors, nurses) can focus more on diagnosis and treatment, while the community network filters and channels people who likely need those services. This more efficient allocation can improve overall system productivity. Moreover, because these professionals are embedded in the community, they can provide continuous and sustainable surveillance unlike a one-time screening camp, they are watching year-round. This continuous presence means even NCDs that develop insidiously have a better chance of being caught.

There are also community empowerment and co-ownership benefits. By engaging barbers, teachers, drivers, etc., the program fosters a sense that “health is everyone’s business,” not just the domain of doctors. It can galvanize broader multi-sectorial action: for example, local businesses might become more involved in health (a salon might hold a “health day” offering BP checks in partnership with the health department). The approach thereby builds a bridge between the formal health system and the community, making healthcare more accessible and community-driven. In the long run, this can enhance trust in public health initiatives and reduce the urban-rural and rich-poor disparities in health-seeking, because nearly every community has barbers, beauty parlors, teachers, etc., who can serve as points of information and referral.

Finally, early detection and intervention facilitated by this approach can lead to better health outcomes and economic benefits. By mitigating disease progression, it reduces the need for costly treatments (dialysis, surgeries) and improves individuals’ quality of life. There is also a macro-economic angle: preventing strokes or heart attacks in the working-age population means higher productivity and lower healthcare expenditure. The cumulative effect of much small early detection could be a significant reduction in NCD morbidity and mortality at the population level over time.

In essence, the program creates a win-win: individuals get more opportunities to safeguard their health, and the health system gains allies in the fight against NCDs, all while fostering a health-aware society. The advantages, however, can only be realized if certain challenges and risks are addressed which is mentioned in Table-4.

**Table 4.** Advantages of Involving Non-Health Professionals in NCD Detection

<b>Dimension</b>	<b>Added Value</b>
Early Detection	Identifies subtle changes before clinical presentation
Community Reach	Engages individuals who rarely visit health facilities
Trust & Acceptability	Builds on existing social relationships
Health System Efficiency	Reduces burden on frontline health workers
Cost-Effectiveness	Extends surveillance without large workforce expansion
Health Awareness	Normalizes everyday conversations about prevention

The proposed approach offers significant promise but must be implemented with careful attention to several operational, logistical, and ethical challenges outlined in Table-5. These potential pitfalls include issues of training quality, accuracy of referrals, community acceptance, health system readiness, and long-term sustainability. To address these concerns, Table-5 summarizes practical recommendations for

policymakers and program implementers that focus on strengthening governance, supervision, training, incentives, monitoring, and multi-sectorial collaboration. By adopting these measures, stakeholders can create a supportive and enabling environment that allows this innovative model to scale effectively, remain resilient over time, and integrate seamlessly into India’s broader healthcare delivery framework for improved NCD control.

**Table 5.** Key Challenges and Recommended Mitigation Strategies

<b>Potential Challenge</b>	<b>Risk</b>	<b>Recommended Strategy</b>
Variable training quality	Incorrect or missed referrals	Standardized curriculum; refresher training
Over- or under-referral	Health system overload or missed cases	Clear referral criteria; monitoring
Ethical breaches	Loss of trust	Signed ethical pledge; supervision
Health system readiness	Poor follow-up of referrals	Strengthen HWC/NCD clinic linkage
Motivation sustainability	Drop-out of participants	Non-monetary recognition; feedback loops
Scalability	Fragmented implementation	Integration with NPNCDC governance

## Conclusions

Engaging non-health sector professionals in NCD prevention and early detection can substantially strengthen India’s response to the NCD epidemic by using the unique vantage points of barbers, beauticians, teachers, drivers, and others to spot early health changes and trigger referrals. With appropriate training, clear guidelines, and ethical safeguards, they can support a community-based surveillance and referral system that complements, rather than replaces, clinical services and integrates with NPCDCS, Health and Wellness Centers, and broader National Health

Mission goals. This multi-sectorial engagement promotes proactive, preventive care, fosters a health-conscious society, and normalizes everyday health conversations, while gradual scale-up, careful monitoring, and alignment with initiatives such as Ayushman Bharat and Swasth Bharat can ensure long-term sustainability and equitable benefits, including for underserved communities.

## References

1. Press Information Bureau, Govt. of India. Status of Non-Communicable Diseases (NCDs) in India. Press Release, 8 Feb 2022.
2. Pati MK, et al. Gaps in integrated care for NCDs in India: A narrative review. *Public Health Rev.* 2020;41:8.
3. Hussein RS, et al. Impact of Thyroid Dysfunction on Hair Disorders. *Cureus.* 2023;15(8):e43266.
4. Joseph A, Samant H. Jaundice. In: *StatPearls [Internet]*; 2024.
5. Kaneri P, et al. Use of salons as health promotion environments for NCD prevention. *Front Public Health.* 2023;11:1161645.
6. Kaneri P, et al. Hairdressing salons for NCD prevention in diverse women. *Lancet.* 2021;398(Suppl):S58.
7. Zaman M, et al. Delivery of community salon interventions for CVD and cancer prevention in South London. *Lancet.* 2023;402(Suppl):S96.
8. Cortelli P, et al. Headache and hypertension. *Neurol Sci.* 2004;25 Suppl 3:S132-134.
9. Kitzman DW, Groban L. Exercise intolerance. *Heart Fail Clin.* 2008;4(1):99-115.
10. Connors EH, et al. Advancing Mental Health Screening in Schools: 15-Month Trends. *Psychol Sch.* 2022;59(6):1135-57.
11. Durlak JA, et al. Impact of enhancing students' social and emotional learning: a meta-analysis. *Child Dev.* 2011;82(1):405-32.
12. Obbagy JE, et al. Chefs' opinions on reducing restaurant meal calories. *Obesity (Silver Spring).* 2011;19(2):332-7.
13. Abdullah L, Abbas O. Common nail changes/disorders in older people. *Can Fam Physician.* 2011;57(2):173-81.
14. Muraki I, et al. Sleep apnea and type 2 diabetes. *J Diabetes Investig.* 2018;9(5):991-7.
15. Gligorijevic V, et al. Skin Manifestations of Insulin Resistance. *Int J Mol Sci.* 2017;18(6):1237.
16. Solomon FM, et al. Beauty salons as venues for health promotion: North Carolina BEAUTY Project. *Health Educ Behav.* 2004;31(6):790-807.