

# Addressing Hypothyroidism Treatment in India among Pregnant Women, Low - Income Residents and Elderly Individuals

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**Abstract:** *Hypothyroidism poses significant health risks for vulnerable populations in India, of which, pregnant women, elderly individuals, and low - income urban residents are significantly susceptible. Despite the availability of treatment, systemic barriers such as lack of disease awareness, access to quality healthcare, and financial constraints prevent early detection and intervention. This research paper aims to analyze these challenges via a literature review accompanied by first - hand interviews with accessible individuals from each of the identified vulnerable groups and propose prospective policy solutions. Findings revealed that the shortage of universal screening programs and low health literacy were significant contributors to the delayed diagnosis and treatment of the disease. The interview data also emphasized the prominent financial burdens faced by low - income individuals and the need for greater obtainability of medication. The developed policy recommendations include implementing universal screening, subsidized Levothyroxine, health literacy campaigns, protocols for improved doctor - patient dynamic and holistic treatment plans (e. g., follow - up care and routine monitoring). Such policies alongside the others put forth, will successfully assist in increasing healthcare equity and ensure better health outcomes for hypothyroidism across India.*

**Keywords:** Hypothyroidism, vulnerable groups, guideline and policy, India, public health

## 1. Introduction

Hypothyroidism, a prevalent endocrine disorder, plagues approximately 11% of the Indian population, significantly impacting public health (Bajaj, 2022). Left untreated, this condition can prompt severe complications, of which, cardiovascular diseases and impaired neurological development are commonly observed long - term implications (Luca Chiovato, Magri and Carlé, 2019). Alarmingly, nearly one - third of individuals with hypothyroidism remain undiagnosed and untreated, bringing to light a critical gap in India's healthcare system (Bajaj, 2022). Despite the serious health risks and largely widespread nature of the disorder, current healthcare policies in India lack a comprehensive framework to effectively address the challenges associated with hypothyroidism, particularly with respect to early diagnosis, treatment accessibility, and disorder literacy among patients (Ramani and Dileep Mavalankar, 2006) (Kalra et al., 2018).

Access to healthcare in India is complex, influenced by socio - economic disparities and systemic inefficiencies. The country's urban population, which comprises about 30% of the total population, faced particular challenges, including steadfast growth of the low - income urban enclave and inadequate healthcare resources. The remaining 70%, accounting for the rural population, encompasses even greater challenges due to deficient healthcare infrastructure, lack of access to medical services like ambulances, and critical shortages in medical practitioners and support services, thereby, aggravating the disparity between urban and rural areas further (Ramani and Dileep Mavalankar, 2006). With only 20% of healthcare expenditure covered by the government and a meagre 3 - 4% of the population insured, a majority of individuals cannot afford essential medical care (Ramani and Dileep Mavalankar, 2006). This lack of financial support infrastructure, specifically in low -

income, rural areas, magnifies the difficulties faced by patients suffering from hypothyroidism (Cerejo, 2023).

This policy paper aims to develop a scientifically informed policy framework to address the prevalence of hypothyroidism in India, taking into account socio - economic, cultural, and healthcare infrastructure factors. A particular focus will be placed on three susceptible populations: pregnant women, elderly individuals, and low - income urban residents. Through analysis of qualitative interviews and evaluation of existing research, the resulting policy recommendations of this paper encompass awareness and education initiatives, screening protocols, integrated care models, financial support mechanisms, training and resource allocations, and research funding and support.

This paper not only highlights the critical gaps in the current healthcare framework regarding hypothyroidism, but also proposes actionable recommendations tailored to the diverse needs of the Indian population. By prioritizing awareness, access, and integrated care, this research contributes to a more robust healthcare strategy that effectively meets the needs of patients suffering from hypothyroidism and ultimately, improving health outcomes across all demographics. It first establishes the inadequacy of the current healthcare system, then discusses treatment circumstances among significant stakeholders, and finally addresses the fundamental reforms to be made to optimize hypothyroidism treatment access in India.

## 2. Materials and Methods

This policy paper gathered data through both a series of interviews and analysis of existing research documents on hypothyroidism - related healthcare in India. First - hand interviews were conducted among available individuals from three vulnerable groups, pregnant women, elderly

individuals and low - income individuals in urban environments to gain valuable perspectives on the existing healthcare landscape and the effectiveness of current policies. Given the dearth in accessibility of significant samples for each group, additional analysis of existing policy frameworks and research studies were employed to gain a holistic sense of present healthcare systems surrounding hypothyroidism treatment and where policy is lacking.

### 2.1 Material List

- 1) 10 existing research studies discussing general healthcare frameworks in India, the Indian healthcare system specific to hypothyroidism treatment, impact of healthcare access on different vulnerable groups and analysis of existing treatment protocols, healthcare insurance accessibility and screening availability among other factors that may suggest the necessary policy to be implemented. Policy documents on existing hypothyroidism healthcare policies and the general healthcare framework at both state and national levels in India and nations with successful hypothyroidism access were procured for additional analysis.
- 2) Interviews were conducted with an individual from the stakeholder groups: pregnant women, elderly individuals and low - income urban residents.

### 2.2 Methodology

- 1) Collect and analyze the existing research studies and policy documents and extract relevant data regarding gaps in policy, access to healthcare, and challenges faced by stakeholders in obtaining proper hypothyroidism treatment.
- 2) Conduct Interviews

### 2.3 Interview Questions

#### Pregnant Women

- 1) Were you routinely tested/screened for thyroid function during your pregnancy? If not, were you informed about the importance of thyroid screening?
- 2) Were you aware of any national guidelines/protocols for hypothyroidism treatment in pregnancy? How effectively were they communicated to you by your healthcare provider?
- 3) Do you feel your healthcare providers were well - informed about the impacts of hypothyroidism during pregnancy and on the fetus?
- 4) Was thyroid function testing and treatment affordable to you? Were there any financial barriers in accessing care?
- 5) Did you feel your healthcare team approached your overall health in an integrated manner, considering other aspects of your maternal health alongside thyroid function?
- 6) Before your pregnancy, were you aware of the risks associated with untreated hypothyroidism for both you and your baby?
- 7) How supportive were your healthcare providers in guiding you with testing, treatment, and follow - up care for thyroid issues during your pregnancy?

- 8) Would you be willing to contribute information about your thyroid health during pregnancy to a national registry or research study to help improve treatment and policy in the future?

#### Elderly individuals

- 1) Have you been tested for thyroid function as part of your regular healthcare check - ups? If so, how frequently?
- 2) Have you experienced any challenges in getting a clear diagnosis for hypothyroidism due to ambiguous test results or overlapping symptoms with other conditions?
- 3) How do you feel about the current screening process for thyroid issues in older adults? Do you think it's adequate, or could it be improved?
- 4) Do you have other health conditions (comorbidities), and how have they affected your thyroid treatment or diagnosis?
- 5) Have your healthcare providers considered your other medical conditions when diagnosing and treating hypothyroidism?
- 6) Were you given a personalized treatment plan for your hypothyroidism that took into account your age and other health conditions?
- 7) How satisfied are you with the treatment plan your healthcare provider has recommended? Do you feel it's tailored to your specific needs as an elderly patient?
- 8) Has your doctor discussed with you how age - related changes in your body might impact your thyroid health and treatment options?
- 9) How often do you have follow- up appointments to monitor your thyroid condition? Are you satisfied with the frequency and thoroughness of these check - ups?
- 10) Has your treatment for hypothyroidism changed over time, particularly as you've aged or developed other medical conditions?

#### Low - income urban residents

- 1) How easy is it for you to access healthcare services for your thyroid condition? Have you faced challenges in getting diagnosed or treated for hypothyroidism?
- 2) Do you usually go to a government healthcare facility, or do you rely on private clinics or hospitals for your hypothyroidism treatment?
- 3) Have you experienced delays or difficulties in receiving treatment or thyroid function tests due to long wait times or lack of facilities?
- 4) Can you afford the cost of hypothyroidism treatment, including thyroid function tests and medications like hormone replacements? How do you manage these expenses?
- 5) Are you aware of any government programs or subsidies that help with the cost of treatment for hypothyroidism? Have you been able to access any financial assistance?
- 6) Do you have health insurance that covers hypothyroidism treatment? If not, how have the costs affected your ability to manage the condition?
- 7) Do you feel that healthcare providers give enough attention to your thyroid condition and explain how to manage it effectively?

- 8) Were you aware of hypothyroidism and its symptoms before you were diagnosed? Did you seek out testing, or was it suggested by your doctor?
- 9) Do community health workers or local clinics help with your hypothyroidism management, such as offering guidance or making sure you have access to medications and tests?
- 10) Have you ever used telemedicine services to consult with a doctor about your hypothyroidism? If so, was it helpful in managing your condition?
- 11) How comfortable are you using mobile phones or other technology to get medical advice or manage your treatment for hypothyroidism?
- 12) Do you have health insurance? If not, what has prevented you from getting insurance coverage? If so, does your health insurance cover thyroid testing and medication for hypothyroidism? If not, how has the lack of coverage affected your treatment?

## 2.4 Comparison

Compare the research findings with the data collected from the interviews to identify gaps in healthcare provisions for hypothyroidism and synthesize these insights to propose new or modified policy recommendations that address the prevalent shortcomings in hypothyroidism care in India.

## 3. Results

The interviews conducted with pregnant women, elderly individuals and residents from the low - income urban enclaves provided many insights into the experiences and challenges faced in their diagnosis and treatment of hypothyroidism. A total of 6 interviews were conducted, two for each of the three stakeholder groups. The key findings, categorized by demographic, are outlined below.

### 3.1 Pregnant Women

#### Screening and Diagnosis

All pregnant women in the study testified to being routinely screened for thyroid function as part of their early prenatal care. These screenings were done in conjunction with other standard tests: testing hemoglobin levels and vitamin panels. Though these tests were routine, a majority of participants confessed to having limited awareness of the cruciality of thyroid regulation during pregnancy prior to their diagnosis. One interviewee stated *"It was one of the first things I was made to do: check my blood type, thyroid function, hemoglobin, and vitamin panel."* However, there was a consistent lack of knowledge about the implications of hypothyroidism on both maternal and fetal health, as one woman stated *"I wish I had been diagnosed pre - pregnancy because I could have tried controlling it with diet and natural remedies."*

Healthcare Provider communication and support (Doctor - Patient Dynamic):

Participants expressed the inadequacy of communication and guidance from healthcare providers about their thyroid condition. Most were diagnosed with hypothyroidism and prescribed levothyroxine without an explanation. An interviewee said *"They just told me I needed to take*

*levothyroxine for a healthy fetus."* The information provided was limited to basic instructions on taking the hormone replacement medication with minimal clarity on the condition's long - term management or potential complications if untreated. This left certain interviewees feeling unprepared and unsupported during their pregnancy: *"They told me my hair fall was linked to hypothyroidism, but that was about it."* Lastly, upon asking whether it seemed that the healthcare providers had sufficient knowledge of the disease, the interviewee also suggested, *"No, they just told me I needed to take levothyroxine for a healthy fetus. Maybe they knew about it but they did not supply much information and it seemed to be normalized for much of the population to consume levothyroxine."*

Additionally, lack of personalized care was also a major concern. Many women communicated that their treatment plans felt generic and untailed to their specific requirements. One interviewee, with a medical background, felt the need to consult additional specialists outside India when they felt their treatment was insufficient, she said, *"I went to an endocrinologist after having my baby...I had to figure out what tests to take and how to monitor my condition better."* Furthermore, follow - up care was described as minimal and most women were prescribed medication without sufficient assistance. One woman shared that she barely received help after her initial diagnosis and was unaware that regular monitoring was necessary for hypothyroidism: *"I wasn't given any information... I thought was just a supplement, not a hormone replacement."* Those with access to endocrinologists post - pregnancy reported more comprehensive care.

Knowledge Gaps and Willingness to Contribute to Research: Participants showcased evident knowledge gaps in their understanding of hypothyroidism and its associated risks. Only a few, with prior medical background, knew about the condition and its potential effects on pregnancy before their diagnosis. One participant said, *"I didn't even know it [levothyroxine] was a hormone replacement and thought it was just a supplement."* Irrespective of these challenges, all participants shared a willingness to contribute their thyroid health data to national registries aimed at improving treatment protocols and policies: *"I would be happy to contribute to help improve treatment for future mothers."*

### 3.2 Elderly Individuals

#### Screening and Diagnosis

The interviewed elderly reported facing significant challenges in obtaining a clear diagnosis due to inconclusive test - results and overlapping symptoms with prior morbidities. One woman, who had endured thyroid cancer treatment, explained the difficulty in identifying her thyroid issues: *"Sometimes my thyroid levels would come okay, sometimes low, sometimes high. It was all over the place because I had cancer. Doctors did not find out till about a year after that."* Seeing as delayed diagnosis were prominent when other health conditions, such as cancer, masked or complicated thyroid symptoms, interviewees felt greater frustration. Thus, they claimed that the healthcare providers overlooked comorbidities when addressing their thyroid health. Contrastingly, one elderly man mentioned

more frequent testing, stating, *"I typically check my thyroid blood levels every 3 - 4 months on my own."* He also felt that his healthcare providers considered his overall health status upon diagnosis of his hypothyroidism and provision of a treatment plan.

#### Treatment Plans and Personalization

The extent of treatment personalization varied. One interviewee remarked *"I had to do a lot of my own research...I went to a sonographer to get an ultrasound done."* She described the trial and error basis of her treatment as her levothyroxine dose was repeatedly adjusted upon continued failure to achieve normal TSH levels. It was only after her ultrasound, where she found a lump, was her condition appropriately addressed. Another elderly man expressed a more positive experience, stating that his healthcare providers tailored his treatment to his specific requirements: *"They consider everything holistically...I am very satisfied."* With a personalized approach addressing his prior conditions in tandem with his hypothyroidism, gave him reassurance and confidence in his treatment plan. However, both participants were uninformed of the potential risks of aging on their thyroid health. An interviewee noted, *"There is no self - initiated dialogue for this on their part."*

#### Follow - Up and Monitoring

One elderly woman conveyed her dissatisfaction with the healthcare system's lack of proactive reminders for thyroid monitoring as she remarked, *"The fact that there is no reminder, which is otherwise provided in western countries, is a little off - putting."* This contributed to her discernment of the lack of involvement and proactiveness of her healthcare provider. On the other hand, an interviewee was satisfied with his ability to self - manage his condition as he felt in greater control of his situation.

### 3.3 Low - Income Urban Enclave

#### Access to Healthcare Services

Access to healthcare was largely constrained by the inadequate government facilities as interviewees reported facing long wait times and overcrowded environments. One interviewee said, *"I have to miss a whole day of work just to get my blood test done at the government hospital,"* showcasing the strain imposed on their livelihood with such a time - extensive process. Likewise, another interviewee complained, *"Sometimes the facilities are so crowded, I have to wait weeks for tests and follow - up appointments."* Thus, despite their financial constraints, given the dire need of medical attention and the long waits and delayed diagnosis within government medical centers, many turn to private clinics instead.

#### Financial Barriers

Without health insurance, affordability of healthcare is of fundamental concern. Interviewees expressed their struggle to pay for thyroid testing and hormone replacement medications. One interviewee highlighted the high costs of care: *"The blood tests and medicines are very expensive and I sometimes have to skip doses to manage expenses."* Meanwhile, another interviewee commented, *"I often take a loan from my employer and have it cut from my next month's salary."* Despite having knowledge of government

programs aimed at providing financial support, most interviewees claimed it was too difficult to navigate these systems: *"I've heard about programs, but I haven't been able to apply successfully,"* outlining the bureaucratic intricacies that contribute to their financial limitations.

Furthermore, many interviewees attributed affordability as the primary barrier to obtaining coverage. One participant explained, *"I can't afford health insurance, and my employer doesn't offer it. This makes it much harder to get the necessary tests and medications regularly."* This lack of insurance formulated the difficulties faced by such individuals with hypothyroidism, causing delayed treatment, increasing health risks and additional financial burden.

Overall, the interviews highlighted prevalent barriers in thyroid healthcare management across the three vulnerable groups discussed, where timely and effective care is inhibited by insufficient patient - education on thyroid conditions, the lack of personalized treatment plans, and prominent limitations to accessing affordable, timely treatment. Financial constraints further complicate these issues, particularly among low - income individuals. Thus, the findings outline gaps in healthcare that are both general and niche across the vulnerable groups, demanding targeted interventions and reforms to improve thyroid health management.

#### Awareness and Support from Healthcare Providers

Interviewees felt extremely dissatisfied with the level of support and care provided by healthcare professionals, one stated, *"They feel I am illiterate, so they don't explain how to manage my condition,"* while another said, *"I wish they would spend more time explaining my condition and how to manage it."* This lack of clarity left many interviewees feeling unprepared to manage treatment independently. Further, even community workers and local clinics are of limited assistance as an interviewee replied, *"Community workers sometimes help, but the resources are not enough."*

#### Use of Technology and Telemedicine

Telemedicine, although used by some, was not widely accessible to a majority of interviewees, of which, some preferred in - person visits. One interviewee noted, *"I've used telemedicine, but I still prefer face - to - face appointments for a more thorough check - up."* Though some participants were equipped to use WhatsApp video calls for consultations, not all were comfortable using more advanced technology: *"I can do WhatsApp video calls, but I'm not very confident using apps for managing my medication."*

## 4. Discussion

### 4.1 Current Status of Healthcare Access in India

Access to healthcare in India is greatly influenced by systemic challenges, ranging from the uneven distribution of healthcare facilities across different demographics, financial limitations, and lack of awareness among patients due to insufficient support and proactiveness of medical practitioners and health institutions. Hypothyroidism is a prominent disease in India that is subject to these

mentioned challenges. Interviews with patients from low - income, urban groups, diagnosed with hypothyroidism reveal that the majority face limited access to specialized medical services. This is consistent with findings from the study by Bajaj (2022), which revealed that nearly one - third of hypothyroid patients remain undiagnosed, mainly due to insufficient access to screening and healthcare resources. This in turn, underscores the need for more comprehensive healthcare initiatives.

Across both the interviews and the literature review, the lack of awareness and education surrounding hypothyroidism is evident, specifically amongst particularly vulnerable groups such as pregnant women and the elderly. Further, as reported by some of the interviewed pregnant women, thyroid function tests are also not routinely conducted during pregnancy, posing a significant risk to maternal and fetal health should hypothyroidism go undiagnosed in such critical physiological stages (Kalra et al, 2018).

Additionally, the lacking healthcare infrastructure also limits follow - up care and comprehensive and personalized treatment plans as mentioned across the interviews, where interviewees only attained appropriate treatment upon self -

initiated screening and specialist consultation (Ram et al., 2023). The psychological implications of such lack of support are paramount, as patients are often left feeling neglected and unaware of their own condition (Cerejo, 2024). The financial burden of accessing healthcare resources and inaccessible health insurance, leads many individuals with a low - income background to forego treatment altogether. The shortcomings of ineffective communication and guidance within the doctor - patient dynamic only magnifies such issues, resulting in poor health outcomes and delayed treatment, as strongly conveyed in the interviews with the low - income urban residents. Thus, based on the findings from the interviews, targeted policy interventions seem to be the most efficient way to address the systemic barriers restricting vulnerable populations from receiving timely and appropriate care for hypothyroidism. Below, we suggest some policy interventions for these three vulnerable populations: pregnant women, elderly individuals, and low - income residents.

#### 4.2 Policy suggestions for the identified groups

##### Pregnant Women



Based on the interviews, pregnant women and their fetus' are subject to significant health risks given the lack of regular pre - natal screening done to account for the critical disease: hypothyroidism. Seeing as this may be attributed to either negligence or lack of awareness among healthcare providers, the following policy should be considered:

1) **Universal Screening Program in Antenatal Care:** Mandatory thyroid screening during the first prenatal visit should be conducted across healthcare facilities in India as part of the existing Maternal and Child Health Programs, ensuring comprehensive coverage across urban and rural populations. This is critical as untreated cases augment risks of miscarriage, preterm delivery, and cognitive impairments in infants (Kalra et al., 2018; Palepu et al.). This is especially necessary during the first trimester.

2) **Targeted Continued Medical Education (CME) programs for Obstetricians and Midwives:** Targeted CME programs are to be implemented for obstetricians and midwives. Such training would explain the importance of routine thyroid testing and screening during pregnancy and provide guidance on successfully managing hypothyroidism during this time.

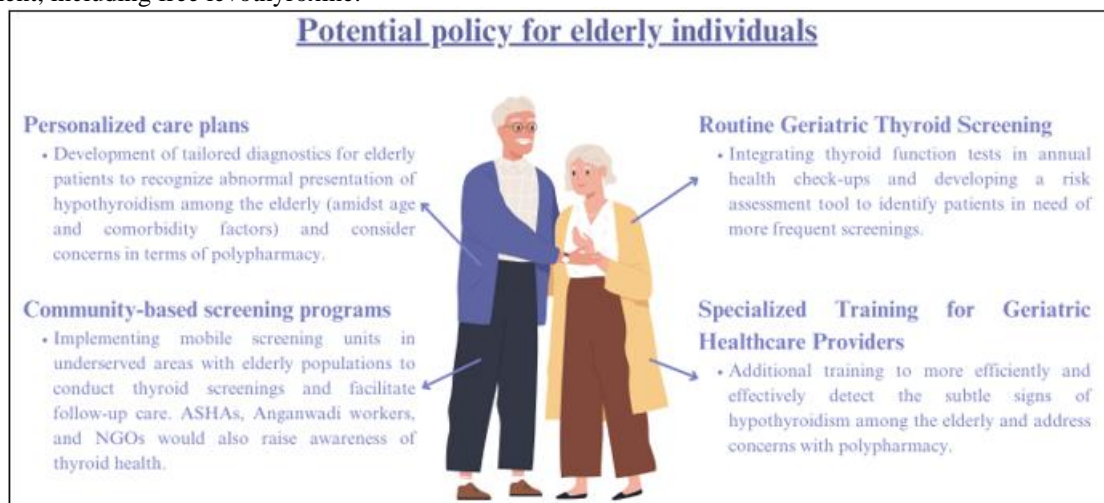
3) **Public Health Awareness Campaigns:** Public health awareness campaigns targeting pregnant women, especially in rural areas, are to be conducted to emphasize the importance of thyroid health and resources available to identify and treat potential conditions of hypothyroidism. Further, informational brochures can be distributed to pregnant women by primary health centers, NGOs and community groups as well.

- 4) **Community Health Workers (ASHA Workers):** Accredited Social Health Activists (ASHAs) and Anganwadi workers play an essential part in India's rural healthcare system (Bindu Shajan Perappadan, 2024). Thus, they must be trained to educate women on hypothyroidism upon their routine home visits and in community meetings.
- 2) **Subsidized Premiums for low - income pregnant women:** While many low - income, pregnant women cannot afford medication, free or highly subsidized premiums would be made accessible. Thus, cost would not be a barrier in gaining insurance as partnerships with private pharmaceutical companies and NGOs or private companies via Corporate Social Responsibility (CSR) initiatives, would provide the funding for medication programs and distribution. The insurance would cover a range of maternal health services: antenatal hypothyroidism screenings, diagnostic thyroid function tests, medications and nutritional supplements.

Amidst the lack of understanding among both medical practitioners and pregnant women, financial burdens associated with accessing hypothyroidism treatment post diagnosis is also of concern:

- 1) **Inclusion in Existing Maternal Health Insurance Schemes:** To reduce the burden on low - income, pregnant women, they would be automatically enrolled in the government health insurance scheme: Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PMJAY), when they register for antenatal care (ANC) at any public or private health facility. The enrollment is to be digitally linked to their Aadhaar Card to track and manage health insurance coverage. This scheme would provide coverage for hypothyroidism screening and treatment, including free levothyroxine.
- 3) **Mandatory Coverage by Employers:** The Existing Maternity Benefit Act could be expanded to include informal sector workers (domestic workers, construction laborers, agricultural workers and daily wage earners) and ensure they are provided maternity health coverage, including necessary screening and treatment. Tax deductions would thereby be awarded for employer compliance.

Elderly individuals



With an array of potential comorbidities and other age - related conditions masking the symptoms of hypothyroidism among the elderly, regular screening and specialized care plans are essential to ensure effective care:

- 1) **Routine Geriatric Thyroid Screening:** Thyroid function tests should be integrated into annual health check - ups for individuals, especially over the age of 60 when the prevalence of hypothyroidism tends to be higher (Garber et al., 2012). A risk assessment tool would be developed for healthcare providers to identify patients in need of more frequent screenings, such individuals range from elderly women (more prone to thyroid dysfunction) (Garber et al., 2012), those with a history of autoimmune disorders (diabetes, rheumatoid arthritis), individuals on medications that may interfere with thyroid function (lithium, amiodarone) and residents of iodine - deficient areas (Mayo Clinic, 2024).
- 2) **Specialized Training for Geriatric Healthcare Providers:** Healthcare providers working with the elderly should receive training to more efficiently and effectively detect the subtle signs of hypothyroidism within this demographic. This includes understanding the symptomatic interplay of hypothyroidism and other existing ailments.
- 3) **Personalized care plans:** Healthcare providers would follow tailored diagnostic guidelines for elderly patients that consider the potential abnormal presentation of hypothyroidism among the elderly. These guidelines would also address concerns with respect to polypharmacy and the potential adverse interactions of thyroid medication.
- 4) **Community - based screening programs:** In underserved areas where Elderly populations may have limited access to healthcare services, mobile screening units may be implemented to conduct thyroid screenings and provide follow - up care. Such units would travel to remote areas regularly. Further, the funding and management of these units would come from ASHAs (Accredited Social Health Activists), Anganwadi workers, and elderly care NGOs that would also work to raise awareness of thyroid health among the elderly.

Low - income Urban Residents



The interviews outlined the systemic challenges faced by low - income urban residents in accessing healthcare, financial barriers commonly encountered, overcrowded facilities and low health literacy, that are in need of dire resolution:

- 1) **Affordable medication programs:** As hypothyroidism medication is found to impose evident financial strain on low - income individuals, Levothyroxine should be included in government - subsidized pharmacies, allowing to be offered at a discounted price or even free. This would ensure consistent access to treatment. In general, hypothyroidism medication should be included in essential medicines lists and made available at subsidized rates in public hospitals as well.
- 2) **Health - literacy campaigns:** Public awareness campaigns should work towards educating the low - income residents on the symptoms of hypothyroidism and the importance of immediate treatment. Further, they would also outline means of testing for and treating the disease should the need arise.
- 3) **Training for ASHAs and Anganwadi Workers:** ASHAs and Anganwadi workers should be trained to recognize symptoms of hypothyroidism upon their visits to urban areas where low - income residents reside and act as liaisons between at - risk individuals and healthcare practitioners, ensuring that those who may not otherwise think to seek medical attention are identified and referred for testing and treatment. These individuals would also inform the low - income urban residents of affordable healthcare options.
- 4) **Mobile Health Units:** To rectify the issue of overcrowded healthcare facilities, services can be directly delivered to the urban areas with low - income residents. Through regular mobile clinics for thyroid screening and other primary care services, healthcare access would be more evenly distributed and accessible across the low - income individuals. These units could routinely visit such areas to provide diagnostic services, follow - ups and medication distribution without the need for patients to wait at overcrowded hospitals. Further, the workers would be equipped with portable diagnostic tools by which they may test and refer patients testing positive for hypothyroidism to the appropriate healthcare centers. This would prevent overcrowding of public health facilities while preventing delays in diagnosis.
- 5) **Patient - Centered Care Approach:** Medical practitioners should be trained to listen to and respect the needs of the patient regardless of their background or social status. Thus, training in cultural competence and empathy is necessary, ensuring all patients, especially the marginalized, feel supported. As a result, clear communication protocols are to be established to ensure all patient queries are addressed and that they are fully informed of hypothyroidism, potential medication side - effects, and the importance of treatment. Furthermore, given the prominence of bias and inequality as the root causes of the ill - treatment of the low - income residents by practitioners, protocols must be completely adhered to, to remain objectivity and professionalism and ensure effective delivery of care.

General Policy Across Vulnerable Groups



Policies to be considered that largely apply across vulnerable groups:

- 1) **Developing a National Registry for all vulnerable groups:** A national registry would be developed to track and manage health data across vulnerable groups. For vulnerable populations such as low - income urban residents where accessing consistent, long - term care may be a challenge, a national registry would improve continuity of care, by ensuring all patient data (Diagnosis, treatment plan, follow - up history) are available across healthcare facilities; monitoring disease prevalence, to allocate resources more effectively; facilitate research, by tracking long - term outcomes and supporting research into treatment efficacy; and ensure personalized care, by having access to a patient's complete medical history.
- 2) **Improved Doctor - Patient Dynamic:** Protocols must be put in place to enhance communication between healthcare providers and patients, ensuring patients fully understand the disease: hypothyroidism and are able to play an active role in deciding their treatment plans. Many patients, specifically those from underserved groups, struggle to fully comprehend their medical condition, treatment options, and the potential long - term side - effects of them. Such protocols would empower patients by allowing them to play an active role in their care and make informed decisions. This also improves overall health literacy to ensure patients understand the importance of adhering to their treatment plans. Further, such measures would build patient trust on their healthcare providers, increasing their likelihood to return for follow - ups as well.
- 3) **National Patient Follow - up Reminder System:** A centralized digital health record would be generated with patient data, including appointment dates and treatment plans. Such information would be associated with their respective Aadhaar Cards and made accessible to healthcare providers across the nation. In addition, a reminder system via SMS notifications or Anganwadi workers would be employed for follow - up appointments, medication refills, and screening basis the patient's treatment plan.

- 4) **School - based thyroid health programs:** Government subsidized consultations and TSH testing should be accessible to children and adolescents, particularly in regions with high prevalence of iodine deficiency (Bajaj, 2022). Such programs would aid in early hypothyroidism detection, intervention, and increase awareness and hypothyroidism literacy in India.
- 5) **Public Health Education on Thyroid Health in School:** Health education campaigns are essential for children, adolescents, parents, and teachers to highlight potential symptoms of hypothyroidism and its impact on growth and cognitive development (Abid et al., 2016). With an educated school community, early detection and treatment of the disease can be ensured.
- 6) **Iodine Supplementation Programs:** Regions with high iodine deficiency in India are at elevated risks of developing thyroid - related disorders like hypothyroidism. Thus, iodine supplement programs are to be implemented to help prevent thyroid dysfunction (Abid et al., 2016; Bajaj, 2022). The government may explore iodine supplementation in schools and the work - place as part of the mid - day meal programs in high - risk areas specifically.

## 5. Conclusion

In conclusion, this paper unpacked the significant shortcomings in thyroid healthcare in India, specifically among three vulnerable populations: pregnant women, elderly individuals, and low - income urban residents. The interviews revealed that early detection and treatment of hypothyroidism is crucial to prevent detrimental health complications such as cognitive impairments and pregnancy - related risks. Even still, financial constraints, hypothyroidism illiteracy, and demographic disparities in access to healthcare facilities – mainly in low - income sectors – continue to interfere with the effective management of this widespread disease in India.

The proposed policy recommendations including increased accessibility to screening programs, subsidized or free Levothyroxine, mobile health units, and health literacy



campaigns, among others, successfully address the aforementioned problems by ensuring early diagnosis and affordable treatment. The extension of healthcare coverage to informal workers and improved doctor - patient dynamics are also key steps in reducing inequities.

The suggested policy targets the critical issues of resources constraints, lack of awareness and social disparities that largely persist in India and prevent the effective treatment of hypothyroidism. The implementation of these reformative policies may lead to more equitable healthcare access and better health outcomes for the vulnerable groups (pregnant women, elderly individuals, and low - income urban residents) identified across the country. Given the widespread nature of hypothyroidism in the nation and the severely lacking healthcare system at present to successfully treat individuals with the disease, the updating of existing health policies is fundamental.

Looking ahead, future research should focus on evaluating the effectiveness of the proposed policy recommendations in real - world settings, specifically in diverse socioeconomic contexts. Wherein, longitudinal studies could provide clarity on the effect of increased screening and treatment accessibility on health outcomes for hypothyroidism patients across the various demographics investigated. Additionally, the exploration of innovative models of care delivery, namely telemedicine and community - based health interventions, may further assist in enhancing access to specialized services, particularly in underserved areas. Moreover, research on patients' experiences with and perceptions of the implemented policy reforms may provide valuable insights into the persisting barriers and facilitators to care, enabling continuous improvements in healthcare delivery. Ultimately, a multifaceted research agenda is necessary in determining the efficacy of the proposed policy in addressing the ongoing challenges of hypothyroidism in India and ensuring that an effective health system is established.

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