

Health Status of Tamil Nadu in India: An Overview

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Abstract

This overview analyzes the health status of Tamil Nadu, India, highlighting its significant achievements and remaining challenges. The state outperforms national averages on key indicators, including lower fertility (TFR 1.7), infant mortality (IMR 17), and maternal mortality (MMR 60), driven by a robust healthcare infrastructure, near-universal institutional deliveries (99%), and high immunization (85%) and sanitation (98%) coverage. Tamil Nadu also excels in women's healthcare, with superior antenatal and postnatal care rates. However, the state faces a growing burden of non-communicable diseases like diabetes and hypertension, alongside persistent issues of anemia and nutritional deficiencies. The findings position Tamil Nadu as a leading model in India's healthcare landscape, though targeted efforts are needed to address emerging and ongoing health concerns.

Key Words: Healthcare, Maternal, Mortality, Indicators.

Introduction

Tamil Nadu has emerged as a leader in India's healthcare landscape, demonstrating remarkable progress in key health indicators. This overview examines the state's health status, highlighting its superior performance compared to national averages. It delves into critical areas such as declining fertility and mortality rates, robust maternal and child healthcare services, and the management of both infectious and non-communicable diseases. The analysis also focuses specifically on women's health, showcasing the state's high rates of institutional delivery and antenatal care. While celebrating these achievements, the introduction also acknowledges persistent challenges, including anemia and the growing prevalence of lifestyle diseases, painting a comprehensive picture of health in Tamil Nadu.

Statement of the Problems

High Burden of Non-Communicable Diseases (NCDs): The state has a higher prevalence of lifestyle diseases like diabetes (12%) and hypertension (25%) compared to the national average, indicating a growing public health challenge.

Persistent Nutritional Deficiencies: Anaemia remains a significant issue, affecting over half of all women (54%) and a fifth of men (21%), with only marginal improvement over time.

Socio-Economic and Biological Barriers to Women's Health: Women's health is adversely affected by a complex combination of biological factors (e.g., cervical cancer, postpartum issues), economic hardships limiting healthcare access, and social factors like gender-based violence and cultural stigma.

Contradiction in Women's Status: A specific concern is the discrepancy between the state's high female literacy rate and its previously high fertility rate, suggesting that education alone has not fully translated into expected health behavioral changes in the past.

Managing the Double Disease Burden: The state must simultaneously address the ongoing challenge of infectious diseases (like TB and HIV) while combating the rapidly rising tide of non-communicable diseases, straining the healthcare system.

These problems highlight the need for targeted interventions beyond the successful maternal and child health programs to ensure sustainable and comprehensive health outcomes for all citizens.

Review of Literature

A significant body of research documented Tamil Nadu's emergence as a leading state in India's public health landscape, while also identifying its unique and persistent challenges. The literature can be broadly categorized into several key themes.

Success in Demographic Transition and Maternal & Child Health:

Numerous studies highlighted Tamil Nadu's early and rapid demographic transition. Ram et al. (2013) attributed the state's below-replacement fertility rate to its long history of strong political commitment to family planning, high female literacy, and widespread acceptance of contraception. This success was closely linked to improvements in maternal health. A study by Subha & Sri (2015) reviewed the state's "Dr. Muthulakshmi Maternity Benefit Scheme," concluding that such conditional cash transfers significantly increased institutional deliveries and antenatal care registration. Similarly, work by Alexander et al. (2015) on the Midday Meal Scheme pointed to its positive, though indirect, impact on child nutritional status and school attendance, contributing to long-term health gains.

The Double Burden of Disease:

Tamil Nadu's experience with the "double burden of disease"—the coexistence of infectious diseases and a rapidly rising epidemic of Non-Communicable Diseases (NCDs). While studies acknowledged the state's effective control of diseases like malaria and polio (Kumar, 2012), research increasingly focused on NCDs. The ICMR-INDIAB study (2017), a large-scale national survey, identified Southern India, including Tamil Nadu, as a hotspot for diabetes and hypertension, linking it to rapid urbanization, dietary changes, and genetic predisposition. This shift was noted to place a new strain on a health system originally designed for acute, infectious care (Thankappan, 2017).

The Persistent Challenge of Malnutrition and Anaemia:

Despite economic progress, literature consistently flagged the stubbornly high rates of undernutrition and anaemia. A analysis of NFHS-3 and NFHS-4 data by Joe et al. (2016) found that while stunting had declined, the prevalence of anaemia among women and children remained largely unchanged, dubbing it an "unfinished agenda." Research pointed to factors beyond mere food security, including poor dietary diversity, inadequate compliance with IFA supplementation, and the high burden of worm infestations (Aswathy, 2018).

Women's Health: Beyond Maternal Care

Women's health beyond maternal indicators. Studies highlighted the paradox of high female literacy not fully translating into empowerment in health-seeking behaviour (Desai & Temsah, 2014). Research also started shedding light on the growing burden of cervical and breast cancers, noting a lack of screening infrastructure and awareness (Shastri, 2018). Furthermore, the high prevalence of anaemia among adolescent girls was identified as a critical predictor of poor maternal outcomes later in life, creating an intergenerational cycle of malnutrition (Rajaretnam & Hallad, 2012).

Robust Health Infrastructure and Emerging Gaps

The literature widely acknowledged Tamil Nadu's well-developed network of Primary Health Centres (PHCs) and its efficient drug procurement system as a model for other states (Balarajan et al., 2011). However, studies also cautioned about urban-rural disparities in healthcare quality and the need for a greater focus on quality of care, counseling, and post-natal follow-up, rather than just quantitative coverage (Sundararaman & Muraleedharan, 2015). Tamil Nadu as a high-performing state that had successfully achieved key demographic and maternal health targets. However, it also consistently warned of new challenges: the escalating crisis of NCDs, the unresolved problem of malnutrition and

anaemia, and the need for a more comprehensive approach to women's health. This body of work set the stage for understanding the state's need to pivot its health priorities in the subsequent decade.

Objectives

- To assess the prevalence and identify the key risk factors (dietary, lifestyle, genetic) contributing to the high burden of Non-Communicable Diseases (NCDs) like diabetes and hypertension among the adult population of Tamil Nadu.
- To evaluate the effectiveness of existing public health programs in addressing the problem of anemia among women of reproductive age in Tamil Nadu and to identify the socio-economic barriers to their success.
- To analyze the socio-economic and cultural determinants that act as barriers to healthcare access and positive health outcomes for women, despite high literacy rates and robust healthcare infrastructure.

Hypotheses

H1: There is a statistically significant correlation between urban sedentary lifestyles, high-calorie diets, and the increased prevalence of diabetes and hypertension in Tamil Nadu, which explains the rates being above the national average.

H2: The high prevalence of anemia among women is significantly associated with inadequate compliance with Iron and Folic Acid (IFA) supplementation programs and dietary patterns low in iron-rich foods, rather than a lack of program availability.

H3: Deep-rooted cultural norms and gender inequalities significantly hinder women's autonomy in healthcare decision-making and access to services, acting as a major barrier to translating high literacy into better health outcomes.

Analysis

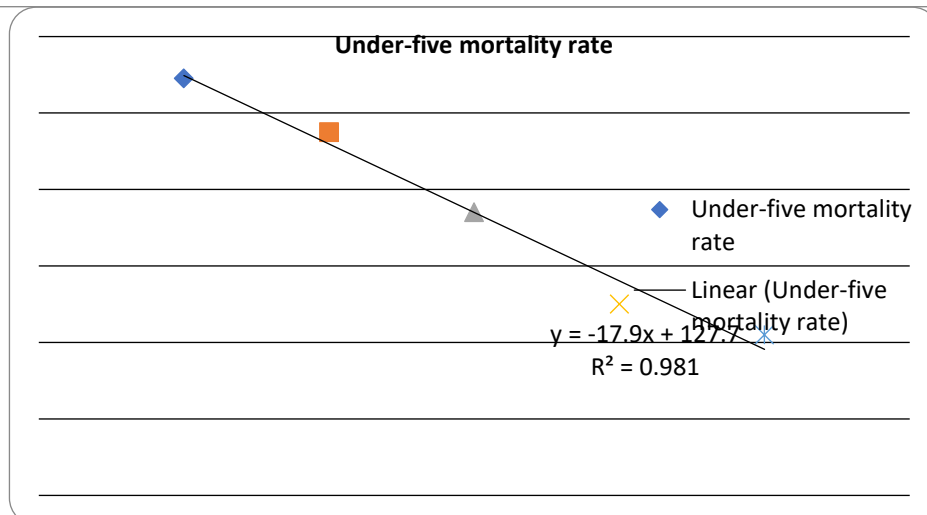
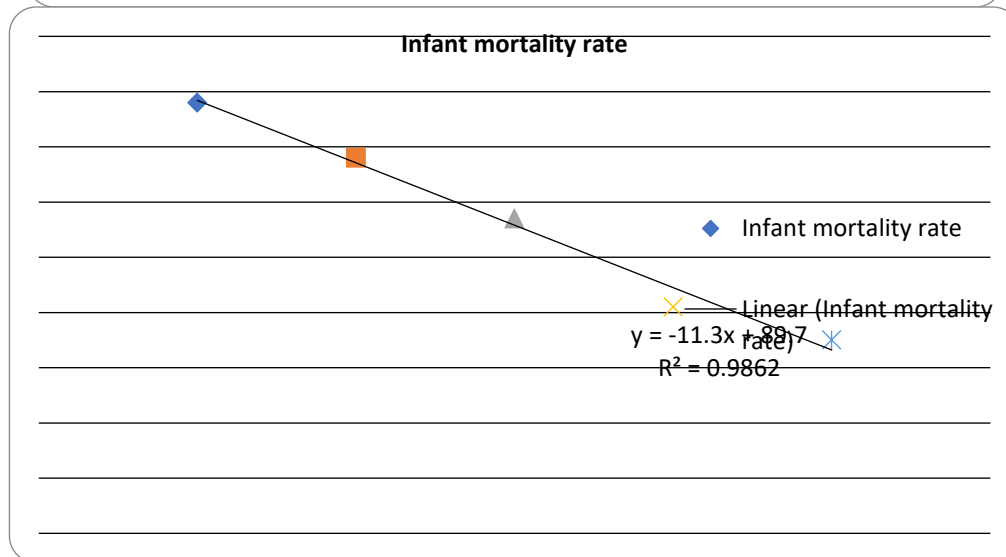
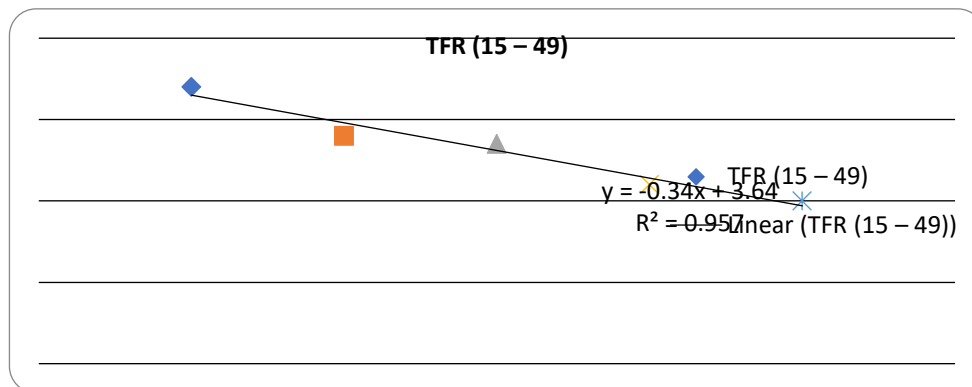
The key characteristics of the Erode district are presented in the preceding chapter. The current chapter examines Tamil Nadu's and India's health situation. The study also needs to determine how easily women in Tamil Nadu and India can receive healthcare.

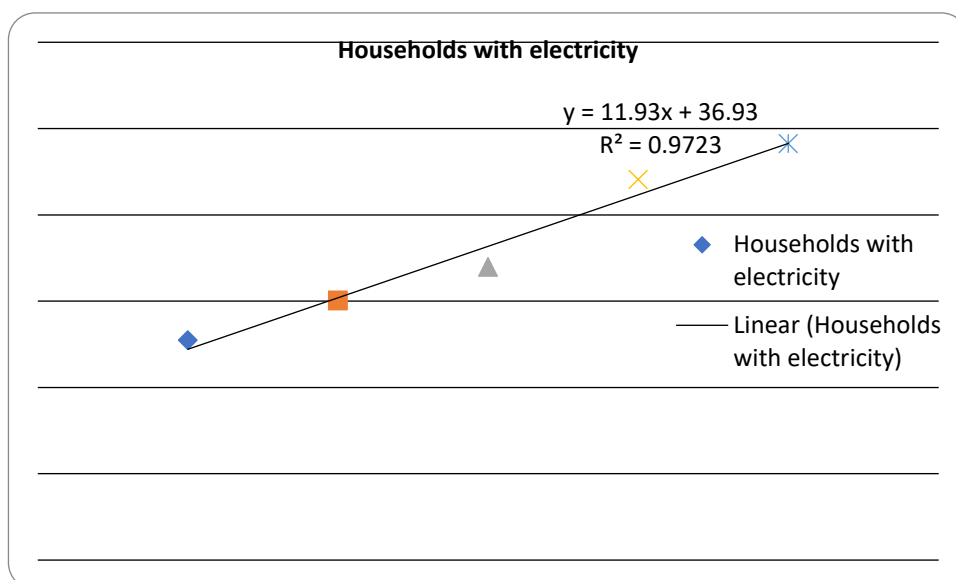
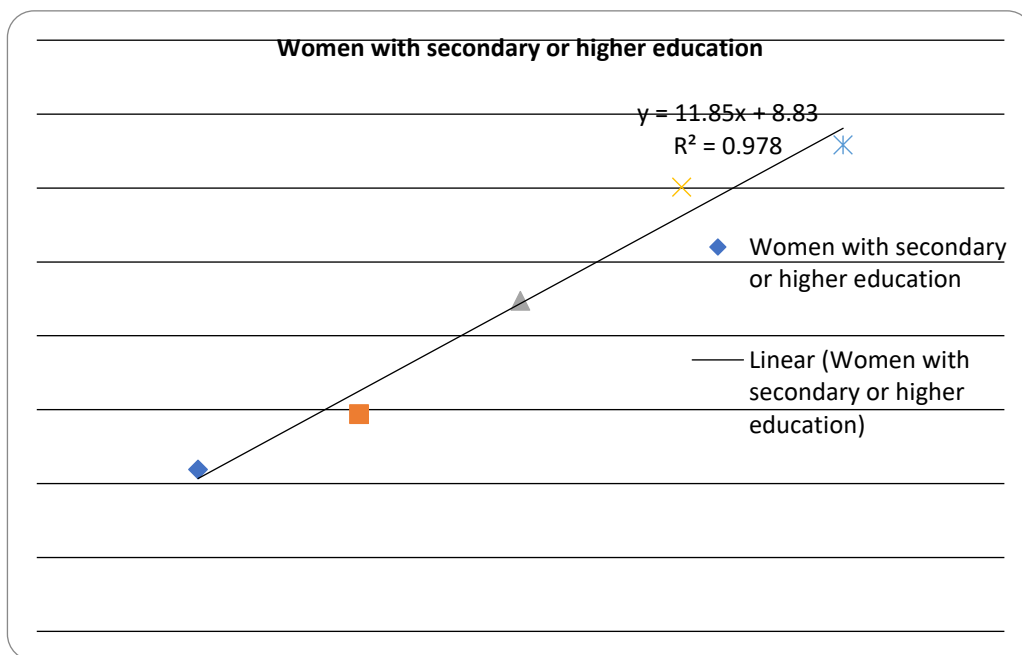
Table 4.1 India's Indicators Performance DHS Program During 2024

Sl. No.	Indicator	DHS 1992 – 93	DHS 1998 - 99	DHS 2005– 06	DHS 2015 – 16	DHS 2019 – 21
1	TFR (15 – 49)	3.4	2.8	2.7	2.2	2.0
2	Infant mortality rate	78	68	57	41	35
3	Under-five mortality rate	109	95	74	50	42
4	Women with secondary or higher education	21.9	29.4	44.7	60.1	65.8
5	Households with electricity	50.9	60.1	67.9	88.2	96.5

Source: The DHS Program Country Quick Stats - <https://www.dhsprogram.com> - June 21, 2024

Table 4.1 reveals that the total fertility rate has declined trends during the analysis period of 1992 - 93 to 2019 - 21 from 3.4 to 2.0. In similar way of results, infant mortality rate from 78 to 35 during the same analysis period in India. Women enrolment of secondary education as well as higher education significant way improvement might be happen in India. As a result, the health care awareness also increases in India, which has shown in the following figure.





Over 72 million people live in the southern Indian state of Tamil Nadu. With a network of public and private hospitals, clinics, and healthcare facilities, the state has a sophisticated healthcare system. The state of women's health in the modern world is a complicated matter. Women around the world deal with a variety of health problems brought on by a confluence of social, cultural, and biological variables.

Factors Related to Biology

Women's bodies present a multitude of biological health challenges. These include postpartum problems, infertility, and illnesses like breast cancer, ovarian cancer, and endometriosis. In addition, many medical therapies are created with men in mind due to a dearth of gender-specific research, which makes them less accessible for women.

Financial Aspects

Women's health is impacted by economic hardships. These include not having paid maternity leave or other benefits particular to a woman's gender, or not being able to receive health care services because of poverty. Women also frequently experience health risks associated with their jobs, such as exposure to hazardous chemicals, long hours, and unsanitary working environments.

Social Factors

Social factors have a major impact on women's health. These include gender-based violence, cultural beliefs that limit women's access to healthcare, and lack of education regarding health topics. Additionally, stigma and discrimination limit women's access to treatment and support.

Overall, it is clear that women's health is a complex issue affected by a combination of biological, economical, and social factors. In order to improve women's health worldwide, it is important to address all these factors.

Women's health status in Tamil Nadu today is a cause for concern. Despite the state having the literacy rate of 80 per cent, its health indicators remain very low. With the highest fertility rate in India, the infant mortality rate is also on the rise. According to the National Family Health Survey (NFHS-4) conducted in 2015 - 16, the state has Total Fertility Rate (TFR) of 2.3, which is much higher than the national average of 2.2

In Tamil Nadu, women suffer from a range of health issues including anemia, malnutrition, cervical cancer, and reproductive health issues. Cervical cancer is one of the leading cause of death among women in the state, with over 40,000 women dying every year. Anemia is also a major health issues are also prevalent in Tamil Nadu. The state has one of the highest rates of female malnutrition, with over 15 percentages of teenage girls giving birth before the age 18. Additionally, there are high rates of materiality with over 300 deaths per 100,000 live births.

In terms of health indicators, Tamil Nadu has relatively low infant mortality rate of around 12 deaths per 1000 live births, and life expectancy off about 74 years. The state also has relatively low maternal mortality rate of around 66 deaths per 1,00,000 live births. However, like many other states in India. Tamil Nadu faces a number of public health challenges. These include issues such as the high prevalence of non-communicable diseases like diabetes and hyper tension, as well as high burden of infectious diseases like tuberculosis and HIV.

In recent years, the state has implemented a number of initiatives to improve women's health like the Maternal and Child Health care program that provide free medical care for pregnant women and children up to the age of 5. The state has also implemented initiatives to provide access to family planning services and maternal health services. Additionally, the state provides free health check-ups and vaccinations to women. Tamil Nadu has also made significant investments in improving women's access to education. The state has implemented initiatives to ensure that girls are enrolled in schools and provided with quality education. This is coupled with initiatives to provide economic support to women, including access to microfinance and entrepreneurship opportunities. Overall, Tamil Nadu has seen improvements in women's health status over the last few decades, due to the state's focus on gender equality and access to healthcare and education.

The health status of Tamil Nadu is a reflection of its comprehensive healthcare system, strong public health policies, and significant progress in various health indicators over the years. Here's an overview of the health status in Tamil Nadu:

Table 4.2: A Decade-wise Trend Analysis of Key Health Indicators from NFHS (NFHS-3 in 2005–06, NFHS-4 in 2015–16, and NFHS-5 in 2019–21)

Sl. No.	Indicator	India			Tamil Nadu	Trend
		2005–06	2015–16	2019–21		
1	Total Fertility Rate (TFR)	2.7	2.2	2.0	1.7	Declining
2	Infant Mortality Rate (IMR)	57	41	35	17	Declining

3	Under-Five Mortality Rate	74	50	42	20	Declining
4	Institutional Deliveries (per cent)	41	79	89	99	Increasing
5	Full Immunization Coverage (per cent)	44	62	76	82	Increasing
6	Stunting in Children (per cent)	48	38	36	24	Declining
7	Wasting in Children (per cent)	20	21	19	19	Fluctuating
8	Women with Anemia (per cent)	56	53	57	54	Fluctuating
9	Men with Anemia (per cent)	24	23	25	21	Fluctuating
10	Households with Improved Sanitation (per cent)	29	49	70	98	Increasing
11	Women Literacy Rate (per cent)	55	68	71	72	Increasing

Source: National Family Health Survey (NFHS), Ministry of Health and Family Welfare (MoHFW), Government of India, in collaboration with the International Institute for Population Sciences (IIPS) and other organizations

Table 4.2 indicates that Tamil Nadu's health and demographic indicators have significantly improved when compared to national averages, reflecting the state's socio-economic development and progressive healthcare policies. Notable findings include a declining Total Fertility Rate (TFR), with Tamil Nadu achieving a lower TFR (1.7) than India's average (2.0), indicating effective family planning measures; the state also outperforms in child health, with a significantly lower Infant Mortality Rate (IMR) (17 vs. India's 35) and Under-Five Mortality Rate (20 vs. 42), demonstrating better paediatric care; institutional deliveries have reached near-universal coverage (99per cent in TN vs. 89per cent nationally), highlighting strong maternal healthcare infrastructure; and immunisation rates are higher in Tamil Nadu (82per cent) than the national average (76per cent), supporting strong public health initiatives. Strong maternal healthcare infrastructure is highlighted by the near-universal coverage of institutional deliveries (99per cent in Tennessee compared to 89per cent nationally). Tamil Nadu has higher vaccination rates (82per cent) than the national average (76per cent), which supports effective public health campaigns.

Nonetheless, there are still issues with nutritional outcomes: anaemia, which affects more than half of women (54per cent) and a fifth of males (21per cent), fluctuates, wasting stays constant (19per cent), and stunting has decreased (24per cent in TN vs. 36per cent across India). Positively, female literacy has increased (72per cent), and sanitation coverage has significantly improved (98per cent in TN vs. 70per cent nationwide), both of which have aided in general growth. In addition to highlighting Tamil Nadu's leadership in healthcare delivery, the report urges focused initiatives in the management of anaemia and nutrition to promote overall wellbeing.

Table 4.3: A Comparative of Key Health Indicators between Tamil Nadu vs. All-India Average

Sl. No.	Indicator	Tamil Nadu	All India Average
1	Population (in millions)	72	1,366
2	Birth Rate (per 1,000 population)	15.2	19.7
3	Death Rate (per 1,000 population)	6.2	6.0
4	Infant Mortality Rate (IMR)	17	35
5	Maternal Mortality Ratio (MMR)	60	113
6	Life Expectancy at Birth (years)	72	70
7	Doctor to Population Ratio	1:1,000	1:1,456
8	Hospital Beds per 10,000 Population	12	7
9	Primary Health Centers (PHCs)	1,800	25,650
10	Community Health Centers (CHCs)	400	5,624
11	Tuberculosis (TB) Prevalence (per 100,000)	120	199
12	Malaria Cases (per 1,000 population)	0.5	1.2

13	Diabetes Prevalence (per cent)	12	10
14	Hypertension Prevalence (per cent)	25	20
15	HIV Prevalence (per cent)	0.22	0.21
16	Full Immunization Coverage (per cent)	85	76
17	Households with Improved Sanitation (per cent)	98	70

Tamil Nadu's modern healthcare infrastructure and successful public health initiatives are reflected in its superior health and demographic metrics when compared to the national average. The state, which has a population of 72 million, has a comparable mortality rate (6.2 vs. 6.0) and a lower birth rate (15.2 vs. India's 19.7), suggesting better population stabilisation. Strong mother and child healthcare services are highlighted by important health indicators like the mother Mortality Ratio (MMR) (60 vs. 113) and Infant Mortality Rate (IMR) (17 vs. 35), which are noticeably better than national averages. In addition, the state boasts a favourable doctor-to-population ratio (1:1,000 vs. 1:1,456), more hospital beds per 10,000 inhabitants (12 vs. 7), and a longer life expectancy (72 years vs. 70). The vast network of Primary Health Centres (1,800) and Community Health Centres (400) in Tamil Nadu guarantees universal access to healthcare, which helps to reduce the prevalence of infectious diseases like malaria (0.5 vs. 1.2 cases per 1,000) and tuberculosis (120 vs. 199 cases per 100,000). Non-communicable diseases, however, are more prevalent in the state, with higher rates of diabetes (12per cent vs. 10per cent) and hypertension (25per cent vs. 20per cent). Positively, successful public health activities are highlighted by the fact that sanitation access (98per cent vs. 70per cent) and immunization coverage (85per cent vs. 76per cent) above national averages. If targeted efforts are required to address rising lifestyle diseases, the overall statistics presents Tamil Nadu as a leader in healthcare delivery, even if the state's HIV prevalence (0.22per cent) is somewhat higher than India's average (0.21per cent).

Table 4.4: An Overview of Health Status of Women in India compared to Tamil Nadu State

Sl. No.	Indicators	India (National Average)	Tamil Nadu
1	Institutional Deliveries (per cent)	89	99
2	Antenatal Care (ANC) Registration (per cent)	75	95
3	Pregnant Women Receiving 4+ ANC Visits (per cent)	51	85
4	Postnatal Care (PNC) Within 48 Hours (per cent)	65	99
5	Women Receiving Iron and Folic Acid (IFA) Tablets (per cent)	75	90
6	Women with Severe Anemia (per cent)	5	3
7	Maternal Mortality Ratio (MMR)	113	60
8	Contraceptive Prevalence Rate (CPR) (per cent)	54	65
9	Contraceptive Prevalence Rate (CPR) (per cent)	70	98

Source; Health Management Information System (HMIS)

According to the comparison data, Tamil Nadu performs noticeably better than the national average in every important area of maternal and reproductive health for women, which is indicative of the state's strong healthcare system and successful public health initiatives. Tamil Nadu exhibits remarkable availability to competent birth attendance, achieving nearly universal institutional delivery coverage (99per cent compared to India's 89per cent). With 95per cent of pregnant women registering for prenatal care (compared to 75per cent nationally) and 85per cent receiving the necessary four or more ANC visits (compared to just 51per cent nationally), the state likewise performs exceptionally well in this area. Critical postpartum monitoring is ensured by the nearly ubiquitous postnatal care in Tamil Nadu (99per cent within 48 hours compared to 65per cent nationwide).

The data highlights Tamil Nadu as a model for maternal healthcare in India, but the near-perfect indicators suggest the state must now focus on sustaining these achievements while addressing residual disparities in underserved populations. The national figures, while improving, indicate the need for accelerated efforts - particularly in increasing ANC visits and postnatal care - to reach Tamil

Nadu's standards. These exceptional results can be attributed to Tamil Nadu's well-established healthcare infrastructure, effective implementation of national health programs, and targeted maternal health initiatives.

According to the study's first findings, Tamil Nadu has become a leader in India's healthcare system, showcasing notable developments in public health infrastructure, illness prevention, and maternal and child health. On some important metrics, such as lower fertility rates (TFR 1.7 vs. India's 2.0), lower infant and mother mortality (IMR 17 vs. 35; MMR 60 vs. 113), and nearly universal institutional deliveries (99per cent), the state performs better than the national average. Strong primary care networks, sound healthcare policy, and the successful execution of national health initiatives are all reflected in these accomplishments.

However, there are still issues, especially when it comes to treating persistent anaemia in women and non-communicable disorders like diabetes and hypertension. Even though Tamil Nadu is a leader in maternal and preventative care, maintaining these advancements and closing gaps in lifestyle diseases, nutrition, and access to healthcare in rural areas will be essential.

The success of Tamil Nadu sets an example for other Indian states, demonstrating that investments in gender-sensitive policies, healthcare infrastructure, and education result in quantifiable gains. To guarantee the long-term health of all of its citizens, the state must build on existing achievements while tackling new health issues.

Conclusion

In conclusion, Tamil Nadu stands as a testament to what robust public health policies, significant investment in healthcare infrastructure, and a focus on education can achieve, having surpassed national averages on most key health indicators. The state's remarkable success in reducing fertility, infant and maternal mortality rates, and achieving near-universal immunization and institutional deliveries is commendable. However, this success is not without its challenges. The analysis reveals a critical epidemiological shift, where the burden of disease is now increasingly dominated by non-communicable diseases like diabetes and hypertension, while persistent issues such as anemia and nutritional deficiencies continue to affect a large portion of the population, particularly women. Therefore, the future health agenda for Tamil Nadu must pivot from its celebrated maternal and child health focus to implement a dual-strategy: launching aggressive public health campaigns against lifestyle diseases while strengthening targeted interventions to combat malnutrition and anemia, ensuring its healthcare system evolves to meet these new and enduring challenges.

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