

# Development of Health Infrastructure in Tamil Nadu

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**Abstract:** Health is an important component of human development index. It contributes to the economic development of a country by increasing the productivity of labour, life expectancy, labour participation rate, etc. The government has initiated number of programmes to improve the health condition of the people at the national level and state level. These measures have eradicated many endemic deadly diseases, increased the longevity of the people, and reduced the maternal mortality and infant mortality rate. It becomes the primary objective of a welfare state like India. Akin to the national initiatives, the government of Tamil nadu has introduced many health programmes to increase the health care facilities to the people. During the study period, the government of Tamil nadu has invested huge amount on health care infrastructure by establishing large number of primary health centres and sub- centres, secondary and tertiary health infrastructures in the state apart from setting up of one medical colleges in every district and upgrading the district headquarter hospitals into a multi- speciality hospitals. The study found that there is a positive correlation between the expenditure of the state government on health sector and the creation of health infrastructure in the state of Tamil nadu.

**Key words:** Primary Health Centre, Sub-Centre, Multi- Speciality Hospital, Infant Mortality Rate, Life Expectancy.

## I. Introduction

Health is an essential prerequisite for the development of human resources and productivity of labour. The life expectancy, standard of living, sex ratio, work participation rate etc, depends on the good health of the people. The government of India initiated number of health improvement programmes to control deadly epidemic diseases like cholera, plaque, small pox etc for the welfare of the people. In addition, large scale health care infrastructures were created to provide world class health care services. Today, the country has achieved the status of fourth prominent exporting country in the world in terms of pharmaceutical and medical equipments, apart from fulfilling the requirements of domestic demand. Sizable amount of foreign exchange is earned through the medical export by the government of India. Indian pharmaceutical industries produce the goods at lower cost and export at lower price to the international community. The World Development Report, 1993 stated that improved health contributes to economic growth in four ways: it reduces production loss, permits the use of natural resources, increases the enrollment of children in schools and it frees for alternative uses of scarce resources. Medical care and balanced and nutritious diet are the two important things necessary for good health. The government plays a crucial role in addressing these challenges and achieving equity in health.

## Health programmes in India

The government of India has initiated number of health programmes to raise the health standard in the country immediately after independence on the basis of Moore committee in 1946 and Mudaliar committee in 1961. The primary objective of these programme were to control epidemics, health care of patients in addition to control of various diseases and to provide training to the employees of the health department to expand the primary health centres in the country side. During the fifth five year plan, the health development programmes were integrated with family welfare and nutrition programme for vulnerable groups- children, pregnant women and nursing mothers. The Srivastava committee recommended that health care services should begin with the community and training health

workers from within the community itself. The national health policy 2002 and the common minimum programme of the UPA government have stressed the need for achieving an acceptable standard of good health among the general population of the country. The common minimum programme envisages raising public expenditure on health to at least 2-3 percent of GDP.

### **National Rural Healthcare Mission (NRHM) - 2005**

The NRHM focused on the provision of accessible, affordable, accountable, effective and reliable primary health care services, especially to the poor and vulnerable sections of the population. The national health mission was launched in 2013 to enable universal access to equitable, affordable and quality healthcare services. The national health mission subsumes the national rural health mission and the national urban health mission to expand the primary health care service coverage in the country which intended to cover slum dwellers and other marginalized groups of all cities and towns in India.

### **Significance of the study**

Tamil Nadu is the forerunner among the states of India in terms of social indicators and raises the standard of health delivery to international standard by ensuring universal access to health facility. It is the fourth highest in terms of life expectancy at birth, second lowest in terms of infant mortality rate and birth rate, third lowest in terms of maternal mortality rate and the tenth lowest in terms of death rate. The health care system consists of a mix of public and private sector. The provision of health care facilities is related to preventive, curative and promotive services. The government of Tamil nadu performs a network of health care facilities at the primary level, district level and the state levels to bridge the gap in the existing health infrastructure and to provide accessible, affordable and equitable health care of the highest order to the general public. The establishment of medical colleges in every district, attaching the taluk level and district level hospitals into a medical college makes the state of Tamil nadu into a hub of health sector capital of India. In this background, the present study focuses on the development of physical infrastructure and its impact in the society in Tamil nadu.

### **Objectives of the study**

The research paper aims to study and analyse

1. the existing health care infrastructure at the primary, secondary and tertiary levels in Tamil nadu,
2. the budgetary allocation on health and family welfare expenditure and its share in social sector expenditure in Tamil nadu, and
3. to highlight the positive trend in the vital health indicators in the state of Tamil nadu.

### **Methodology**

The study is based on secondary data which are gathered from various published reports and records of the government of India and the government of Tamil Nadu and unpublished records of the government during the study period 2004-05 to 2013-14. It is an exclusive attempt of analyzing the state government contribution in the system of allopathic medicine, creation of health care infrastructure and their achievement in the improvement of health status of the people of Tamil nadu at primary, secondary and tertiary levels by ignoring the private sector

contribution and the role of Indian medicine infrastructure in the state. The paper used statistical tools like averages, percentages and tables to interpret the research problem.

### Limitations of the study

The present study aims to analyse the health care institutions and their achievements of the state owned hospitals and excluded the role of private players in health care infrastructure. The inclusion of the private sector contribution in the health care infrastructure will give spectacular development of health care facilities in Tamil nadu and India. The study included only the allopathic medical infrastructure and ignored the infrastructure of Indian medicine namely, AYUSH in the discussion. In addition, the statistical data used in the study are secondary information which was collected by the government agencies for different purposes. The reliability and accuracy of the secondary data will influence the findings and conclusions of the study.

## II. Health care Institutions in Tamil Nadu

The health care delivery mechanism consists of three categories viz, primary, secondary and tertiary health care systems.

### 1. Primary Health care Services in Tamil Nadu

The primary healthcare system consists of primary health centres (PHCs) and health sub-centres (HSCs). They are rendering the preventive, curative and rehabilitative health care services to the rural people. The rural health care infrastructure was strengthened under the national rural health mission in order to realize the objective of health for all. The number of PHCs functioning in the state has increased into manifold during the planning period. At present, there is one primary health centre for every 30,000 people in plains and 20,000 people in hill and tribal areas. Similarly urban primary health care institutions were also established to provide health and family welfare services to the population within one to three km of their dwelling areas. In 2013-14 there are 134 urban primary health centres functioning in urban areas with total bed strength of 274. In addition, 31.65 lakh outpatients and 0.30 lakh inpatients, 2962 deliveries of which 2897 normal deliveries and 65 caesarian deliveries were conducted. On an average 8672 out patients per day were treated through these urban primary health centres.

The health sub-centres are providing primary health care services relating to maternal and child health at the bottom of the society. These are established for a population of 5000 in plain area and 3000 in hill and tribal areas which are manned by village health nurses.

**Table 1 Growth of Primary Health care Infrastructure in Tamil Nadu**

Year	No. of PHCs	No.of Beds	No.of Sub-Centres	Total No. of Primary Health Care Centre
2004-05	1415	7191	8682	10097
2005-06	1417	7191	8682	10099
2006-07	1417	7191	8683	10100
2007-08	1421	7191	8706	10127

2008-09	1533	7191	8706	10239
2009-10	1539	7191	8706	10245
2010-11	1539	7191	8706	10245
2011-12	1592	12873	8706	10298
2012-13	1614	12935	8706	10320
2013-14	1751	12979	8706	10457

Source: Economic Appraisal, Govt. of Tamil Nadu, Various Issues

The Table 1 presents the number of primary health centres and the no. of sub- centres functioning in Tamil Nadu during the period 2004-05 to 2013-14. It highlights that the number of PHCs have increased from 1415 in 2004-05 to 1751 in 2013-14 showing an absolute increase of 23.74 percent during the period. Moreover, the growth of these institutions has increased steadily. Similarly the number of sub- centres has increased from 8682 to 8706 which exhibits the commitment of the government of Tamil Nadu in providing the health care services at the primary level. Similarly the number of doctors working in these primary health care institutions has increased from 4386 in 2011-12 to 4864 in 2013-14. Hence the doctor population ratio has moving downwards from 1: 11518 in 2011-12 to 1: 10596 in 2013-14.

## 2. Secondary and Tertiary Health care System in Tamil Nadu

It comprises of district head quarters hospitals, taluk hospitals, women and children hospitals, dispensaries, mobile medical units, police hospitals and non- taluk hospitals etc. At present, there are 31 district head quarter hospitals, 154 taluk hospitals, 76 non- taluk hospitals, 19 dispensaries, 10 mobile medical units, 7 women and children hospitals, 2 T.B. hospitals, 2 T B clinics, 7 leprosy hospitals and 47 medical education college hospitals catering to the requirements of both secondary and tertiary health care services in the state. In addition to the above the district head quarters hospitals and medical education college hospitals offering specialized health care facilities backed by excellent diagnostic tertiary care support any where in the state.

**Table 2 Growth of Secondary and Tertiary health care system in Tamil Nadu**

year	Teaching hospitals	No.of beds	Dt. Head quarters hospital	No.of beds	Taluk hospitals	No.of beds	Non-taluk hospitals	No.of beds
2004-05	42	21162	29	8478	155	10017	80	2268
2005-06	42	21833	29	8478	155	10017	80	2268
2006-07	42	22120	28	8321	155	9999	80	2256
2007-08	42	23455	26	7706	155	9999	80	2278
2008-09	44	24612	27	7853	154	10031	80	2280
2009-10	44	-	30	8602	151	10581	80	2591
2010-11	-	-	30	8938	152	11417	79	2770
2013-14	47	-	31	-	154	-	76	-

Source: Economic Appraisal, Govt. of Tamil Nadu- Various Issues



The multi- speciality hospitals were established with the aim of providing access to health services to the weaker sections of the society. In the year 2013-14 there were 9,184 doctors, 12,848 nurses and 6,924 Para-medical staff is working in these institutions. The Table 2 highlights the secondary and tertiary health care systems in the state. The number of teaching hospitals has increased from 42 in 2004-05 to 47 in 2013-14 which implies the number of medical colleges has increased. Similarly the head quarters hospitals declined marginally and started increasing from 2009-10 onwards. The taluk level hospitals have come down from 155 to 151 and have increased to 154 and the non-taluk hospitals have also come down in absolute number from 80 to 76. The decline in the number of taluk level and non- taluk level hospitals is due to the upgrading of these institutions into head quarters hospitals or multi- speciality hospitals.

### 3. Women and Child Health Institutions in Tamil Nadu

There are seven hospitals functioning in the state in order to cater to the needs of the women and children. The vaccination of children against six serious preventable diseases is implemented on priority basis. This immunization programmes were started in 1985 which has drastically reduced the incidence of some diseases and completely eradicated the incidence of preventable diseases viz, TTM, DPT, polio, BCG, measles and Japanese encephalitis in the state.

**Table 3 Women and Child health Infrastructure in Tamil Nadu**

year	No.of hospitals	No.of beds	Total patients treated (in lakhs)	Surgeries conducted
2004-05	7	98	NA	NA
2005-06	7	98	NA	NA
2006-07	7	98	NA	NA
2007-08	7	98	NA	NA
2008-09	7	98	NA	NA
2009-10	7	98	NA	NA
2010-11	7	98	NA	NA
2011-12	7	537	8.33	0.18
2012-13	7	537	7.93	0.17
2013-14	7	537	2.54	0.05

Source: Economic Appraisal, Government of Tamil Nadu, Various Issues

The table 3 reveals that there are 7 hospitals in Tamil nadu exclusively for women and children with 119 doctors employed. The total number of beds has increased from just 98 in 2004-05 to 537 in 2011-12. In 2012-13 these hospitals have treated 7.93 lakh patients, of which 76 percent were outpatient. On an average 1641 outpatients and 532 in patients were treated in these hospitals.

### III. Health Expenditure in Tamil Nadu

The government of Tamil Nadu has accorded highest priority to the development of social sector since the beginning of the planning era. This comprises of expenditure on health, education, water supply, family welfare,

nutrition, housing etc. The health expenditure is increasing in the state due to the dedication of the government to provide advanced medical facilities to the people.

**Table 4 Health sector Expenditure in Tamil Nadu**

Year	Health Expenditure (in crores)	Social Sector Expenditure (in crores)	Health Expenditure as Percentage of Social Sector Expenditure
2000-01	1708.53	7792.20	21.92
2001-02	1647.44	7677.05	21.45
2002-03	1715.52	7974.04	21.51
2003-04	1881.94	8597.76	21.88
2004-05	2035.55	9721.78	20.93
2005-06	1107.90	11316.41	9.79
2006-07	1309.72	13048.40	10.03
2007-08	1608.68	16918.94	9.50
2008-09	1895.06	21371.48	8.86
2009-10	2520.50	22957.52	10.97
2010-11	3395.58	28909.15	11.74
2011-12	3539.02	33261.75	10.63
2012-13	4134.02	38622.88	10.70

Source: Economic Appraisal, Government of Tamil Nadu, Various Issues

The health sector expenditure is presented in the table 4 which shows that this sector got nearly 21 percent of social sector expenditure between the years 2000-01 to 2004-05. During this period expansion of health sub-centres and many primary health centres were setup in rural and urban areas. From 2005-06 onwards the expenditure on health and family welfare were separated, hence the proportion of health expenditure registered declining growth from 20.93 percent to 9.79 percent of social sector expenditure. In real terms the proportion of health expenditure declined marginally. Now, the health expenditure is nearly 10 percent of the social sector expenditure in Tamil Nadu. In absolute terms the amount of expenditure has increased from 1107.90 crores in 2005-06 to 4134.02 crores in 2012-13 registered fourfold increase in health care spending. So, the health indicators in Tamil Nadu have shown a significant positive trend.

**Table 5 Health Expenditure and Health care Infrastructure – Karl Pearson's Correlation**

Year	Health expenditure (in crores)	No. of primary health care centres	No. of secondary and tertiary health care centres	Total No. of health care centres
2004-05	2035.55	10097	313	10410
2005-06	1107.90	10099	313	10412
2006-07	1309.72	10100	312	10412

2007-08	1608.68	10127	310	10437
2008-09	1895.06	10239	312	10551
2009-10	2520.50	10245	311	10556
2010-11	3395.58	10245	311	10556
2011-12	3539.02	10298	311	10609
2012-13	4134.02	10320	311	10631

Source: Economic Appraisal, Government of Tamil Nadu, Various Issues.

### Testing of Hypothesis

**Null – Hypothesis:** There is no relationship between expenditure on health and health care infrastructure in Tamil nadu.

**Alternative Hypothesis:** There is significant relationship between health expenditure and health infrastructure in Tamil nadu

#### Model Summary

Model	N	Mean	Std. deviation	R-value	P- Value
1	9	2.3933	1071.63	0.882	0.01

\*\* Correlation is significant at 0.01 level (2-tailed)

**Predictors:** Health care infrastructure in Tamil nadu: Amount of health expenditure

It is evident from the model summary that there is significant increase in the health care infrastructure in Tamil nadu during the study period. Since p-value is 0.01 the null hypothesis is rejected at 1 % level of significance. Hence, it is concluded that the health care expenditure has created significant health infrastructure in Tamil nadu. So, the alternate hypothesis is accepted and it is concluded that the health care expenditure has created significant number of health infrastructure in Tamil nadu.

### IV. Health Indicators

The vital health indicators are the determinants of the development of health care facilities in a country. The indicators like Infant Mortality Rate, Maternal Mortality Rate, Total Fertility rate, death rate etc., reveals the health improvement conditions of the people.

**Table 6 Health indicators in Tamil Nadu**

Year	Birth rate	Death rate	Total fertility rate	Infant mortality rate
1971	31.4	14.4	NA	113
1981	28.0	11.8	3.4	91
1991	20.8	8.8	3.2	57
2001	19.1	7.7	2.1	49
2011	15.9	7.1	1.7	22

Source: Economic Appraisal, Government of Tamil Nadu, Various Issues

The Table 6 highlights the vital health indicators in Tamil Nadu for the past four decades. In this period the birth rate and death rate have declined to one half i.e. the birth rate has declined from 31.4 to 15.9. This implies that the family welfare programmes were effectively implemented in the state. Hence the birth rate declined significantly. Whereas the death rate have declined from 14.4 to 7.1 due to the availability of sophisticated health care services which is depicted in the enhancement of life expectancy of the people from 66.00 in 2001-05 to 68.9 in 2006-10 . Similarly the total fertility rate of Tamil Nadu have declined from 3.4 in 1981 to 1.7 in 2011 and the infant mortality rate have fallen drastically from 113 per thousand in 1971 to 22 in 2011. All these indicators witnessed the fact that the health expenditure in Tamil Nadu have contributed positively towards the good health of the people.

## V. Conclusion

The government of Tamil Nadu has shown keen interest in the provision of health care services. The expenditure on health has increased significantly since independence. The expansion in the number of primary health centres, health sub- centres and the urban primary health centre at the base level; the expansion of medical college hospitals, district head quarters hospitals, taluk hospitals, non- taluk hospitals etc. have grown and catered to the requirement of the people. Moreover, the women and child care hospitals have taken care of and the vaccination of children against five preventable diseases is the great achievement of the state. The decline in birth rate, death rate, infant mortality rate, maternal mortality rate, total fertility rate and increase in the life expectancy of people at birth etc, is commendable and are above the national average which indicates the achievement of the state on health sector. In spite of all these achievements, there are some lacunae in the provision of health services in Tamil Nadu.

1. The doctor population ratio is very high compared to other countries
2. The private sector health care infrastructure grows at a very high rate which could not be availed by a common man, and
3. Even the poor and middle class people prefer to go to a private clinic than government operated dispensaries and hospitals due to various reasons. Hence, the government operated health care system should be strengthened on par with the private owned health care institutions for a better health care service to a common man.

## References:

1. Banerjee, A, Esther. C, Duflo and Angus Deaten, Health care delivery in Rural Rajasthan, Economic and Political Weekly 39 9 pp 944-949, 2004.
2. Directorate of family welfare, Health indicators at a glance, 2014-15, Govt. of Tamil Nadu.Chennai-6
3. Economic Survey 2007-08, Ministry of Finance, Government of India.
4. Economic Survey 2013-14, Ministry of Finance, Government of India.
5. Economic Appraisal, Government of TamilNadu, various issues.
6. Government of India, Planning Commission, Eleventh five year plan 2007-12
7. Goel, K and Kehera, R Public health facilities in north India, Economic and Political Weekly, 2015
8. Kurian , N.J. : Financing health care in India” The Hindu, 15<sup>th</sup> Jan 2010



9. Ministry of Health and Family Welfare: Rural Health care system in India, Government of India New Delhi .2005
10. Montgomery, Mark. R: Urban poverty and health in developing countries” population bulletin, Vol.64, 2009.
11. NSSO 2004, Morbidity, Health care and the condition of the aged, 60<sup>th</sup> round, Report no. 507, New Delhi.
12. Ramani, K.V: Health system in India: opportunities and challenges for improvement, working paper, 2005-07, IIM Ahmadabad.
13. World Bank, India: Inclusive Growth and Service Delivery: Building on India’s success, World Bank, Washington D.C., 2006.

