

Public Health Scenario in Kerala with Special Reference to Tribal Population: A Critical Review

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ABSTRACT

The State of Kerala has got one of the best public health infrastructures in the whole of India. The performance of this south Indian State in respect of various health-related indices, like, hospital facilities, trained doctors and nurses, etc. has been very appreciable. The cases of maternal mortality rate (MMR) and Neonatal Mortality Rate (NMR) which are 19 and 4 in Kerala as against 97 and 20 at the national level are just two examples. Despite this fact, the case of tribal health in Kerala is still very poor and its needs special attention. Pointing out this fact, the paper suggests the need for holistic, integrative and pro-poor models like financial inclusion, microfinance, Community Based Eco-Tourism (CBET) etc. for the overall development of the tribal populace in general, and improving their health situation in particular.

Keywords: Public health, Tribal Health, MMR, Child Mortality, Neonatal Mortality, E-Health, CBET.

1. INTRODUCTION

Regarding the public health scenario in respect of the Kerala State in India there is no dispute regarding its superior status vis-à-vis India as whole, as per the available literature. This situation has been continuing even in the Post-Covid regime as was the case before the global pandemic. Kerala could very meaningfully leverage the State's excellent ICT infrastructure to effectively tide over the adverse impact of Covid-19. Jose et. al. (2014) have noted that only 85 percent of the tribal women alone could utilize the maternal healthcare facilities completely in Kerala as against 100 percent by the non-tribal women, because of their lower educational status and the lack of transport facilities. Govt. of Kerala (GOK) in its recent (Jan. 2025) report *Economic Review 2024* has admitted, 'Special attention is given to the health needs of groups such as tribal groups' and that waterborne disease in Kerala is mainly due to the 'unavailability of safe drinking water in many parts of the State especially in tribal and coastal areas' (*Economic Review 2024*, p.378). Often, the health concerns of tribal people are closely linked to their poor economic, educational and social situations and hence a holistic approach alone can bring about their long-term as well as sustainable welfare.

The health issues of the tribal people need to be addressed from a broader perspective, thus ensuring them regular earnings through gainful enterprises or occupations, providing better education including financial literacy to equip them to avail the financial support from the Government through ICT means, like the DBT (Direct Benefit Transfer) payments in schemes like MGNREGS under the Govt. of India (GOI), etc. are vital for their holistic growth. So also, social and political empowerment of the tribal population (especially tribal women) by means of poverty alleviation programmes like *Kudumbashree* under the GOK, and ensuring that they benefit holistically through initiatives like CBET (Community Based Eco-Tourism) are also important. Only through their overall and integrative development their health issues of the tribal populace can be addressed in a comprehensive manner.

Significance of the Study

Given the situation that necessitates the GOK to acknowledge and address the tribal health issue by 'Special attention is given to the health needs of groups such as tribal groups' (GOK, 2025, *Economic Review 2024*) even when the Kerala is far ahead of India in most of the key indices [e.g. Maternal Mortality Rate (MMR) and Neonatal Mortality Rate (NMR) are 19

and 4 (Kerala) as against 97 and 20 (India)] there is vital need for making a critical review of the health situation of tribals in Kerala, with a view to suggest remedies. While acknowledging the reality that tribal health scenario in Kerala is discouraging, it is equally important to explore the remedial measures that are pragmatic as well as comprehensive, holistic and sustainable. The attainment of Sustainable Development Goals (SDGs), especially SDG-3 (Good Health and Wellbeing), calls for addressing the health issues of the tribal populace in Kerala. Key significance is accorded to ICT adoption in India (e.g. *Digital India* drive by the GOI, many GOI schemes that insist of DBT mode of payments) in general and Kerala in particular (GOK's drive for turning Kerala into a *knowledge economy*). This situation of an 'all pervasive ICT thrust' has given another dimension to Kerala's tribal health issue. Digital health (E-health) has been accorded topmost priority in Kerala and the State could clearly show how to effectively leverage its vast ICT infrastructure to combat the Covid-19 pandemic, before the whole world. The vital need for environmental protection in any development initiative, including healthcare, for the long term sustainability of such initiatives has to be taken into account in the context of tribal healthcare also.

While solving the health issues of the tribal population in Kerala is of utmost significance, it is equally important to consider the unique features of this State (like, vast ICT infrastructure, wide pool of technically qualified human resources, excellent natural environment that is conducive for tourism, world-renowned traditional healthcare brand viz. *Kerala Ayurveda* and so on. So, tourism models like ecotourism in general and the CBET (Community Based Eco-Tourism) in particular is particularly relevant for tribal development in general and to address the issue of tribal health too, in particular in a holistic and comprehensive manner. Based on an empirical study of the public health system in Kerala with special reference to maternal health by Jose et. al. (2014), by analysing two broad groups viz. tribal women and non-tribal women, the authors have noted the need for an accessible, affordable and good quality public health system for the tribal people.

Research Questions

- (i) What is status of Kerala's public health situation in general and tribal health situation in particular?
- (ii) How can Kerala's ICT infrastructure and e-health system be used to support tribal healthcare?
- (iii) What development paradigms can bring about tribal development holistically including healthcare?
- (iv) How health is related to allied areas like housing and what is the need for an integrated approach?
- (v) What policies enable tribal development in Kerala, especially in improving the tribal health status, in a holistic manner with due regard to the development of allied sectors like tribal housing conditions.

Objectives

- (1) To study the public health situation in Kerala, with a focus on the health issues of the tribal people;
- (2) To study the ICT-enabled healthcare system in Kerala and the access of the tribal people to the same;
- (3) To study the efficacy of tourism models like ecotourism, especially CBET, to support tribal welfare;
- (4) To study the sectors allied to health, like, housing conditions and to chalk out a holistic approach; and

To suggest strategies for tribal welfare in Kerala, including their health issues, in a holistic manner with due regard to ICT adoption, promotion of models like CBET, and various sustainability norms.

2. MATERIALS AND METHODS

The present study is structured into an exploratory cum descriptive-analytical study that is built on thorough analysis of secondary data from authentic sources relating to tribal population in India, especially those in the State of Kerala. The underlying theoretical model in this study is that of inclusive and equitable economic growth for enabling an equitable and sustainable economic development. Thus, tribal health status in Kerala needs to be improved on the lines of the general public health system in the State. Being an exploratory study no hypothesis has been framed, rather research questions are sought to be answered.

Past studies

Earlier studies on public health system in Kerala, like, Jose et. al. (2014) have noted the need for making the public health system in the State more accessible, more affordable and also of higher quality. In respect of maternal healthcare the motivation by the respective health workers has also been noted to be important in the study by Jose et. al. (2014). Shabeer and Krishnan (2017) have pointed out that Kerala needs to make an introspection on the reach of its public healthcare system into the poor and other marginalized groups in the State, like, the tribal population in the State; and that the tribal health status is particularly vulnerable.

Many studies have pointed out the need for an integrated and holistic approach to tribal development for their sustained wellbeing. Huybers and Bennet (2003) noted the vital need for suitable environmental management in nature-based tourism locations, by way of private as well as public initiatives for ensuring the competitiveness in tourism spots and better

sustainability. The need for ICT-integration in tourism and allied sectors for their better competitiveness and long-run sustainability has been noted by many studies. ICT-integrated tourism projects are really relevant in Kerala, as its environment faces 'Ecological Overkill' pointed out Oommen (2008) "Reforms and the Kerala Model". A national level analysis on sustainability of Indian tourism with special reference to Kerala tourism by Manoj P K (2008), 'Sustainable Tourism in India: A Study from a Global Perspective with Focus on Tourism Prospects of Kerala' has noted the high growth prospects Indian tourism from an international perspective, and the exceptional potential of Kerala tourism due to its unique features has also been noted. As per the study findings, the author has pointed out the measures to be adopted for the rapid and sustainable growth of Kerala's tourism sector. A book on ecotourism in India by Singh, Sarvjeet (2009) has noted that ecotourism is a totally novel tourism approach and that it offers avenues to tourists to experience the powerful displays of nature, and to learn the vital need to preserve biodiversity, conserve natural resources and protect local cultures. Sudheer, B (2015) in his research on Responsible Tourism (RT) in Kumarakom in Kottayam (Kerala) has pointed out alternative and innovative practices like RT are vital to minimize the negative environmental impact as well as to ensure its sustainability in the long-run. Sarojkumari, et al. (2023) in their joint research "Health Monitoring Based Cognitive IOT Using Fast Machine Learning Technique" in Journal of Data Acquisition and Processing have noted the vital need for using ICT-based tools for scientific health monitoring in the modern world.

Pradeep et. al. (2017), "Community based tourism for the sustained economic development of Kerala: A study with a focus on ecotourism" in International Journal of Multidisciplinary Research Review has delved into the need for promoting CBT (Community based Tourism) in the State of Kerala in South India given the huge tourism potential of this State and the need to preserve the environment's quality also. The development potential of ICT integration was researched by a few scholars, both national and international. Manoj (2007) "ICT industry in India: a swot analysis" Journal of Global Economy in his national level analysis has looked into India's ICT industry and its key significance in rapid national economic growth. Globally, Pickens (2009) "Window on the Unbanked: Mobile Money in the Philippines" could demonstrate how ICT-integration through a cheap ICT device (mobile phone) played a key role in empowering rural women and ensuring rural prosperity through financial inclusion. Manoj (2010) "Impact of technology on the efficiency and risk management of old private sector banks in India: Evidence from banks based in Kerala" could prove that ICT-integration by banks improved their efficiency. Nasar and Manoj (2013) "Customer satisfaction on service quality of real estate agencies: An empirical analysis with reference to Kochi Corporation Area of Kerala State in India" found that greater awareness level of real estate agents coupled with transparency and social networking could enhance customer service and hence drive business growth. Manoj (2013) "Prospects and Challenges of Green Buildings and Green Affordable Homes: A Study with Reference to Ernakulam, Kerala" has noted the high growth prospects for green homes, as green homes could create huge employment opportunities and sustained economic growth. Singh and Singh (2023) have noted the poor financial literacy and that their financial scores are dependent highly on their levels of income, education, internet access, and family system.

Many research studies have delved into the vital need for facilitating sustained economic development by way of diverse sorts of models, interventions, and tools (e.g. ICT adoption); from education advances to export promotion, and from promoting SEZs to aiding ecotourism. Varghese, K.X, and Manoj, P.K. (2013), "Educational loans and the higher education sector in India" observed that as study loans could improve quality of India's human resources and enhance youth employability, such loans should be promoted. Manoj, P.K. (2015) "International Container Transshipment Terminal (ICTT) and its impact on coffee exports from India: An analysis" noted the key role that ICTT played in exports and thus economic growth. Manoj, P.K. (2009), Special economic zones in India: financial inclusion: challenges and opportunities noted the role of SEZs in rapid economic growth. Manoj, P.K. (2017) "Segmentation Strategy for Promotion of Ecotourism Products: Evidence from Thenmala Ecotourism" observed that careful analysis, planning and segmentation of tourists resulted in rapid economic growth through ecotourism. Rajesh and Manoj (2015) "Women Employees work life and challenges to Industrial Relations: Evidence from North Kerala" found that trade-off between work and life (work life balance) is vital for women for better industrial relations. Manoj (2016) "Employment Generation from Rural Tourism: A Field Study of the Local Community at Kumbalangi, Kerala" pointed out tourism's vast potential for employment generation and suggested for providing greater ICT resources as well as online services. Manoj (2016) "Real Estate Investment Trusts (REITs) for Faster Housing Development in India: An Analysis in the Context of the New Regulatory Policies of SEBI" pointed out innovative products (e.g. REITs) are vital for fast housing development in the Indian context and hence the rapid economic development. Manoj (2016) "Bank marketing in India in the current ICT era: Strategies for effective promotion of bank products" pointed out the crucial necessity for ICT-integrated marketing by the banking institutions in this ICT era. Lakshmi and Manoj (2017) "Service quality in rural banking in north Kerala: A comparative study of Kannur district co-operative bank and Kerala Gramin bank" pointed out that greater ICT-adoption by KGB could make its performance better than that of a Co-operative bank like Kannur District Co-operative Bank (KDCB). Lakshmi and Manoj (2017) "Rural Customers and ICT-based Bank Products A Study with a Focus on Kannur District Co-operative Bank and Kerala Gramin Bank" observed that greater level of customer acceptance for ICT-integrated bank products in respect of Kerala Gramin Bank (KGB) than in respect of KDCB's traditional type products.

Joju, Vasantha, and Manoj (2017) "Future of brick and mortar banking in Kerala: Relevance of branch banking in the digital

era” has noted that though ICT-adoption is imperative in modern banking, ‘human touch’ as in ‘brick and mortar’ (traditional) banking is also vital. Joju, Vasantha, and Manoj (2017) “Financial technology and service quality in banks: Some empirical evidence from the old private sector banks based in Kerala, India” have observed that fin-techs (financial technologies) could really enhance service quality and are key for success in modern banking. Manoj (2017) “Construction costs in affordable housing in Kerala: Relative significance of the various elements of costs of affordable housing projects” whereby the author prioritizes the cost elements for enabling selective cost control and ICT acts as a key tool towards this end. Manoj (2017) “Cost management in the construction of affordable housing units in Kerala: A case study of the relevance of earned value analysis (EVA) approach” could reveal the wise use of EVA for effectively managing construction costs. Joju, Vasantha, and Manoj (2017) “Electronic CRM & ICT-based banking services: An empirical study of the attitude of customers in Kerala, India” noted the key significance of digital (ICT-enabled) CRM, or Electronic-CRM (e-CRM) for efficiently and competitively doing the banking business, also pointing out the positive customers’ feedback towards e-CRM. Another CRM study in the context of banking by Manoj (2018) “CRM in old private sector banks and new generation private sector banks in Kerala: A comparison” has observed that NPBs (New Private sector Banks) in Kerala could perform better than OPBs (Old Private sector Banks) in CRM-adoption, mainly in respect of high-tech services like E-CRM and thus NPBs could exercise better command over their customers through such high-tech services. Manoj (2019) “Social banking in India in the reforms era and the case of financial inclusion: Relevance of ICT-based policy options” has made suggestions about ICT-driven policies to improve social control in the ongoing digital banking era. Manoj (2019) “Dynamics of human resource management in banks in the ICT era: A study with a focus on Kerala based old private sector banks” has observed that ICT-integrated HRM policies lead to banks’ competitiveness. Manoj (2019) “Competitiveness of manufacturing industry in India: need for flexible manufacturing systems” has observed the key need for ICT-integrated production using modern technologies like flexible manufacturing systems (FMS) in the Indian context to attain greater manufacturing competitiveness.

Joju and Manoj (2019) “Digital Kerala: A study of the ICT Initiatives in Kerala state” have delved into the ICT initiatives in Kerala – the State with one of the topmost in internet penetration as well as in universal literacy in India, and suggested measures best utilize ICT. Joju and Manoj (2019) “Banking Technology and Service Quality: Evidence from Private Sector Banks in Kerala” observed that ICT in banking improves quality and thus it should be encouraged. Ali and Manoj (2020) “Impact of Falling Price of Rubber-A Case Study of Kothamangalam Taluk in Ernakulam District” have noted that because of frequent price falls the livelihood of rubber farmers are affected and thus governmental actions, like MSP (minimum support price) are essential. Manoj (2015) “Prospects of Responsible Tourism in Kerala: Evidence from Kumarakam in Kottayam District” has noted the vast scope of RT (responsible tourism) to support economic growth. Manoj (2016) “Determinants of sustainability of rural tourism: a study of tourists at Kumbalangi in Kerala, India” has pointed out the major factors that influence the sustainability of rural tourism, including enhanced ICT infrastructure. Manoj (2015) “Impact of Rural Tourism on the Environment and Society: Evidence from Kumbalangi in Kerala, India” has observed the clearly negative environmental effects of rural tourism and hence the vital need to curb them. Manoj (2019) “Tourism Sector in Kerala in the Post-Flood Scenario: Strategies for its Sustainable Growth With a Focus on Responsible Tourism” has observed the key role that RT plays in reviving the flood-hit Kerala economy. Manoj (2023) “Corporate Decisions of RIL: Impact on Share Prices and Policy Implications” Migration Letters has delved into the RIL’s corporate decisions and their influence on share prices. Manoj, P.K. (2015) “Housing Microfinance: A Study on Quality, Cost and Default Rate with Respect to Bhavanashree in Kerala” has noted that HMF (Housing Micro Finance) has lower asset quality and HMF has higher transactional costs.

Deepa Jawahar, and Aslam Muhammed, M. K. (2021). “Product–place image and destination brand equity: special reference to “Kerala is an ayurvedic destination” point out that product-place image, destination image significantly influence the brand image. Parul G Munjal (2021). “Charting the role of digital platforms for cultural heritage tourism in India” has noted the immense capacity of digital platforms to leverage the growth of cultural heritage tourism in India. Paul and Nimmi (2022) Sustainable tourism development: discerning the impact of responsible tourism on community well-being. *Journal of Hospitality and Tourism Insights* have noted that RT leads to the socio-economic, cultural and environmental wellbeing of the community. Saritha and Manoj (2023), “Social inequalities in IT sector: Evidence from Kerala State in India” *Environment and Social Psychology*, have noted the prevalence of inequality in Kerala’s IT sector and the need to eliminate this for the State’s rapid and equitable economic growth. Manoj (2023) “Affordable Healthcare and Affordable Housing: Need for an Integrative Approach for the Holistic Growth of the Digital Economy of Kerala, India” *Community Practitioner*, has observed that a knowledge society like Kerala should duly promote housing and healthcare sectors interactively using ICT. Manoj (2023) “Health Expenditure in Covid-19 Times and the Need for Affordable Houses that Nurture Healthy Citizens: A Roadmap for Digital Economy of Kerala” *Migration Letters* has pointed out that by learning from Kerala’s Covid19 experience, the State should concentrate on homes that really consider the ‘health’ aspect because this aspect could enhance the social value to houses. Manoj, P.K. (2023) “ICT for Sustained Community Development in India in the 5G Era” *Community Practitioner* has pointed out the crucial need for high-tech ICT infrastructure that ensures better internet connectivity for rapid and equitable economic growth.

Manoj (2023) “Health Aspect in Housing Development for Attaining Greater Social Value: The Case of ‘Affordable Housing For All’ Goal in Digital India” Community Practitioner has observed the utmost need for integrating the health aspect in housing development for attaining social value. Singh and Singh (2023) “Financial literacy and its determinants among the scheduled tribes: evidences from India” have noted the poor state of financial literacy among the tribal households in Himachal Pradesh in India and that factors like literacy, income level and family status significantly impact financial literacy. UN Report (2016) Digital Financial Inclusion has pointed out immense prospects of ICT adoption for digitally empowering the masses globally, learning from successful global experiences. McKinsey (2023) report has observed the key role that ICT plays to bring about sustained and inclusive growth in G20 nations, including India. UNWTO (2023) report has suggested that global tourism has not yet recovered fully from the Covid-19 crisis that emerged in the late 2019 and 2020 across the whole world. Lakshmypriya and Varghese (2024) “Indigenous Tribes and Inclusive Engagement: An Integrated Approach for Sustainable Livelihood Into the Future” have noted the utmost need for a holistic approach towards tribal development, and suggested rural tourism as a means of sustained rural development, including tribal welfare. Tripathi and Preetha (2024) “Public health infrastructure and human resources in tribal areas of India: a decadal assessment (2012–2022) with Rural Health Statistics data” have noted that public health infrastructure available to the tribal people in India has not grown commensurate with growth in tribal population thus resulting in decline in the health facilities that are available to the tribal population in India.

Based on the above reviews, it is noted that most studies on tribal development and tribal health have pointed out the need for an integrative and holistic approach. So, to address tribal health issue we need to go for tribal welfare in toto, and then look into their health aspect also. Thus, along with health situation allied sectors, like, housing conditions, working and living conditions, sustainability of the natural environments wherein the respective tribal community is located are all equally significant. In this context, CBET model of ecotourism, widespread ICT adoption in healthcare (e-health) as well as in other fields etc. are vital. Thus, regular earnings, good housing conditions, financial literacy as well as digital literacy and capability to independently use ICT-based devices (like, mobile phones, kiosks etc.) are all necessary for holistic growth of the tribal population, including proper healthcare of self and the dependents. As Kerala-based empirical studies are rare, especially in the post-Covid scenario, this study seeks to bridge this research gap.

3. ANALYSIS AND DISCUSSION

Kerala could attract global attention during the days of Covid-19 by effectively leveraging the State’s vast ICT infrastructure to provide ICT-enabled healthcare to the masses and thus to combat the global pandemic. Before the Covid-19 pandemic that burst out in the late 2019 and early 2020 throughout the globe and also after the devastating effects of this global crisis across the world, including the ongoing era (early 2025) the public health situation in Kerala has been relatively far ahead of the overall scenario at the national level, i.e. India as a whole. This is evident from the latest (Jan 2025) report of the GOK, *Economic Review 2024*, in which a comparison of the public health indices of the State of Kerala has been made with those at the national level (average for India as a whole). Accordingly, it is noted that Kerala has been far above the national average in respect of the national average in respect of most of the performance parameters and the case of MMR (maternal mortality rate) is a glaring one which happens to be as low as 19 for Kerala as against as high as 97 for India as a whole. This index reflects the high level of hospitalization facilities as well as other public health infrastructure which are available in the State of Kerala as against the rest of India, and hence the very low MMR of 19 for Kerala as against 97 at the national level (India as a whole). Besides MMR, in respect of other indices also, like Life Expectancy, Deaths Receiving Medical Attention and so on the striking superiority of Kerala may be observed vis-à-vis the rest of India or India as a whole. The life expectancy of a typical Keralite is 75 years, i.e. 5 years above an Indian citizen, in general. In respect Keralite males it is almost 72 years i.e. over 3 years higher than males in India as a whole. (Table I).

Table I: Public Health Indices of Kerala vis-à-vis India as a whole – A Comparison

Sl. No.	Indicators	Kerala	India
1	Total population (in crore) (Census 2011)	3.34	121.06
2	Decadal Growth (per cent) (Census 2011)	4.90	17.7
3	Sex Ratio (Census 2011)	1084	943
4	Child Sex Ratio (Census 2011)	964	919
5	Birth Rate #	13.2	19.5
6	Death Rate*		
	(a) Children (0-4)	1.8	8
	(b) Children (5-14)	0.5	0.4
	(c) Persons (15-59)	2.7	2.9
	(d) persons (60 and above)	39.1	42.3
7	Natural Growth Rate #	6.2	13.5
8	Per cent of deaths receiving medical attention*		
	Government	43.3	29.9
	Private	37.4	18.9
	Qualified professional	16.0	33.2
	Untrained/others	3.4	18.0
9	Still Birth Rate*	4	3
10	Crude Birth Rate*	13.2	19.5
11	Maternal Mortality Ratio**	19	97
12	Expectancy of Life at Birth***	75	70
	Expectancy of Life at Birth*** - Male	71.9	68.6
	Expectancy of Life at Birth*** - Female	78	71.4

Source: Govt. of Kerala (2025), *Economic Review 2024*, Jan. p. 360.

From Table I, it further follows that life expectancy of a typical Keralite female is 78 years which is over 6 years higher than that of a typical Indian woman. Kerala's sex ratio of 1084 suggests that in Kerala there are 84 female births against 1000 male births, as against just 943 female births for every 1000 male births for India as a whole. In fact, Kerala is the only State in India where the sex ratio is over 1000, i.e. the only State in India where female child births outnumber the male child births. Regarding the percentage of deaths receiving medical attention, Kerala's 43.3 percent (Government medical attention) is over 13 percent higher than the national average of just 29.9 percent. In respect of Private medical attention, the difference is more glaring whereby Kerala has 37.4 percent as against just 18.9 percent for India as a whole, i.e. Kerala's position is over 18 percent higher than India as a whole. (Table I).

Furthermore, while the decadal population growth rate at the national level is 17.7 percent (2011) the corresponding figure at the Kerala State level is just 4.9 percent. Similarly, while the birth rate in Kerala is only 13.2, the same is as high as 19.5 percent at the national level. All these facts about the public health situation in Kerala suggests the obvious superiority of this State against any other State in India. This fact is particularly relevant in respect of female health as is reflected in the

very low MMR of 19, life expectancy of females (78 years) that is over 6 years higher than that of the Indian average, sex ratio which is higher than 1000 and so on. Besides, the IMR (Infant Mortality Rate) in Kerala is much lower than that of India as a whole. In short, the superior public health situation of Kerala is beyond doubt. (Table I).

Table II: Child Mortality Indices in Kerala State and India – A Comparison.

Sl. No.	Indicators	Kerala	India
1	Infant Mortality Rate #	6	28
	Infant Mortality Rate # -Male	10	28
	Infant Mortality Rate # - Female	3	28
2	Neo-Natal Mortality Rate*	4	20
3	Perinatal Mortality Rate*	8	18
4	Child Mortality Rate*	2	8
5	Under 5 mortality Rate*	8	32
6	Early Neo-natal Mortality Rate*	4	15
7	Late Neo-natal Mortality Rate*	0	5
8	Post Neo-natal Mortality Rate*	2	8
9	Crude Death Rate*	7	6
10	Percentage of live births by type of medical attention received by mothers*		
	Government	44.7	54.6
	Private	55.2	28
	Qualified professional	0.1	9.7
	Untrained/others	0.1	7.8

Source: Govt. of Kerala (2025), *Economic Review 2024*, Jan. p. 361.

Now, considering the specific case of child mortality status in Kerala vis-à-vis India as a whole, the clear superiority of the State of Kerala becomes more glaring. Accordingly, the Infant Mortality Rate (IMR) in Kerala is as low as 6 in Kerala as against 28 in India as a whole. More striking is the IMR-Female case which is as low as 3 in Kerala as against 28 at the national level; and in respect of IMR-Male case the variation between the respective figures is wide, yet less striking than female i.e. 10 (Kerala) and 28 (India). In respect of Neonatal Mortality Rate (NMR) also there is a very striking difference, the NMR for Kerala being just 4 as against 20 for India as a whole. In respect of Perinatal Mortality Rate (PMR) also there is a glaring superiority for Kerala as is evident from a PMR of 8 for Kerala as against 18 for India as a whole. It may further be noticed that Child Mortality Rate (CMR) of Kerala is just one-fourth as that of India as a whole, CMR of Kerala being 2 as against India's average CMR of 8. Also, 'Under 5 Mortality Rate' shows a similar pattern, as Kerala has just 8 as against 32 for India as a whole. So also are the cases of Post NMR (2 and 8 respectively), Early NMR (4 and 15 respectively), Late NMR (0 and 5 respectively). In short, the Child Mortality indices of Kerala obviously better than India's average figures. (Table II).

Table III: Tribal Population in Kerala State and India – A Comparison.

	India	Kerala
Percentage to Total Population	8.6	1.45
Decadal Growth Rate	23.7	33.1
Child Population to Total Population	16	11.2
Literacy Rate	58.96	75.81
Female Literacy	49.35	71.1
Male Literacy	68.53	80.76
Sex Ratio (Rural)	991	1031
Sex Ratio (Urban)	980	1070
Sex Ratio (Total)	991	1035
Infant Mortality Rate (Rural)	85	60
Infant Mortality Rate (Urban)	61	44
Infant Mortality Rate (Total)	84	60

Source: Govt. of India, *Census of India* (as of 2011).

Regarding the special features of the tribal population in Kerala vis-à-vis India as a whole, it is noted that while as high as 8.6 percent of the Indian population is tribals their share in Kerala is only 1.45 percent. However, while the decadal growth in tribal population in India (as of 2011) is at 23.7 percent, the same in respect of Kerala State is at a higher level of 33.1 percent; thus suggesting that the tribal population in Kerala is growing faster. However, the child population to total population in Kerala is 11.2 percent as against 16 percent at the national level – almost 4 percent lower in Kerala. Glaringly, the literacy rate of the tribal population in Kerala about 17 percent higher in Kerala and is at the level of 75.81 percent as against just 58.96 percent at the national level. The case of female literacy among the tribal population in Kerala is much more striking as is evident from almost 22 percent higher literacy rate of 71.1 percent as against just 49.35 percent alone at the national level. In respect of male literacy among the tribals also, there is a whopping difference of over 12 percent, the respective figures being 80.76 percent in Kerala as against 68.53 percent alone at the national level. In short, the socio-economic profile of tribals in Kerala is much ahead of the national average and this is evident from the facts depicted in Table III.

Even though the tribals in Kerala have got a socio-economic, demographic and health profile that is superior to tribal communities elsewhere in India and their respective indices are ahead of the national average for the tribals (India as a whole), their situation vis-à-vis the non-tribal population is significantly lower as per the empirical studies done in Kerala. A study done by Shabeer and Krishnan (2017) in Kerala in the pre-Covid context and published in 2017 has noted a high hospitalization rate of about 127 percent for the tribal population as a whole and also that there is wide disparity among the different tribal groups, which varies from 158.27 percent (Kuruman) and 90.16 percent (Muthuvan). (Figure I). This situation calls for proper remedial strategies, including ICT-enabled interventions (like, e-health scheme) for providing high quality healthcare facilities that are accessible as well as affordable to the tribal population.

Figure I: Hospitalization rate among Tribal Communities in Kerala.

Source: Adapted from Shabeer and Krishnan (2017), p. 14.

The high hospitalization rate (Figure I) as observed among the tribal population in Kerala is rightly supported by their high morbidity rate also. As in the case of hospitalization, in respect of morbidity also there exists wide variation across the different tribal groups. Overall, one out of four tribals (25 percent) has got very high need for healthcare and this is the highest in respect of Mala Arayan group (43 percent). For a little more than one-third of the tribals, in general, there is 'High' need for healthcare (not, 'Very High') and for two groups (viz. Muthuvan and Uraly Kuruma) such a 'High' healthcare need is experienced by almost a half (46 percent, to be specific). As high as 41.33 percent of the tribals feels only 'Low' healthcare need and Irular is the group having the highest share (54 percent) of 'Low' healthcare need people. (Table IV).

Table IV: Level of Healthcare Need among the Tribal Groups in Kerala.

Level	Paniyan	Adiyan	Kuruman	Kurichiyan	Uraly Kuruma	Mala Arayan	Muthuvan	Irular	ST (combined)
Low	42	36	50	44	23	30	39	54	41.33
High	32	43	20	39	46	28	46	32	33.67
Very High	25	21	30	17	31	43	14	14	25
Total	100	100	100	100	100	100	100	100	100

Source: Adapted from Shabeer and Krishnan (2017), p. 15.

Regarding the self-reported health status of the tribal population in Kerala also there is high variation across the diverse tribal groups; and their health status is relatively very high for the tribal group Muthuvan (as nearly half of the respondents, as high as 46.43 percent, reported 'Very Good' status) and the same is relatively poor for the tribal group Uraly Kuruma (as 30.76 percent reported 'Very Bad' status). It is noted that only 6 percent of the respondents have reported their health status as 'Excellent', 27.67 percent of them have reported it as 'Very Good' and 28.67 percent as 'Good'. The rest 37.67 percent of them have revealed their own health status as 'Bad' (27.67 percent) or 'Very Bad' (10 percent). In general, the self-reported health status of the tribal population in Kerala (Table V) depicts a very poor picture regarding the tribals in Kerala, even though the same may be better than the general scenario regarding them at the national level.

Table V: Tribals in Kerala – Self-reported Health Status.

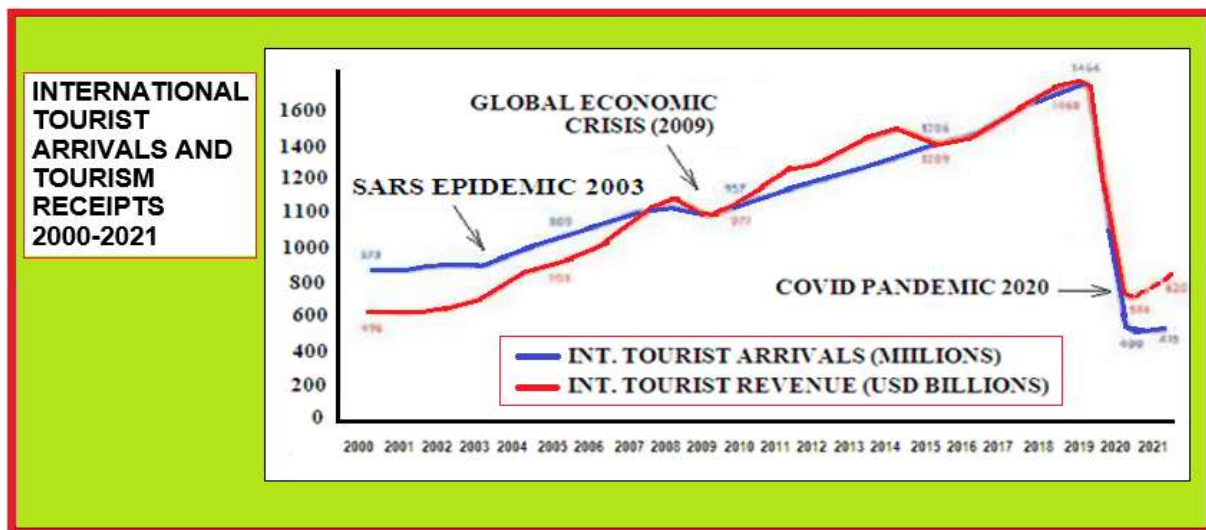
	Very Bad	Bad	Good	Very Good	Excellent
Paniyan	12.26	33.96	41.51	12.26	0
Adiyan	14.29	14.29	42.86	28.57	0
Kuruman	3.33	30	30	36.67	0
Kurichiyan	14.63	21.95	29.27	34.15	0
Uraly Kuruma	30.76	30.77	38.46	0	0
Mala Arayan	10	15	5	40	30
Muthuvan	0	35.71	3.57	46.43	14.29
Irular	0	25	25	42.86	7.14
ST (combined)	10	27.67	28.67	27.67	6

Source: Adapted from Shabeer and Krishnan (2017), p. 15.

Major Findings and Suggestions

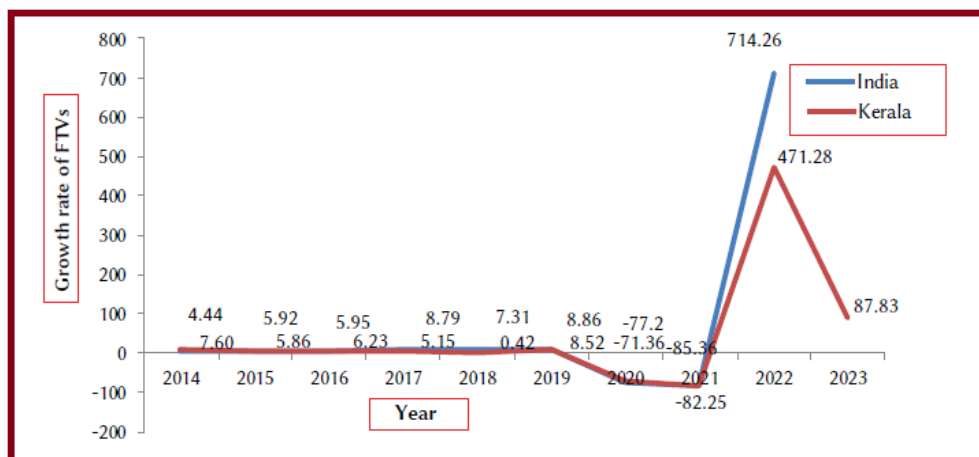
In view of the foregoing it may be noted that the health status of tribal communities in Kerala, in general, is better than that of the national average (India as a whole), especially in respect of tribal women. Similarly, the public health scenario in respect of Kerala State is superior to the national average and is better than the rest of India, especially in respect of Keralite women; and Kerala's status regarding the Child Mortality Rate (CMR), Neonatal Mortality Rate (NMR) as well as Early NMR, Late NMR, Post NMR etc. are glaringly ahead of the national averages in this regard. Thus, Kerala's public health situation in general and child health situation in particular are significantly better than the rest of India. Despite the above facts, the tribal health status in Kerala is much lower than that of the non-tribal population or that of the general public as a whole. The GOK itself acknowledges this fact in its latest report (Jan 2025), Economic Review 2024, by stating that the health needs of the tribal population needs special attention and also that health schemes that are culturally sensitive need to be offered to them. Accordingly, GOK seeks to provide culturally sensitive programmes to address the health problems of the tribals in Kerala – i.e. programmes that regard their traditional health practices simultaneously with interventions using modern medicine also – so as to enhance the health situation of the tribal groups in the State. (Economic Review 2024, p.361). In this context, it is noted that many studies including the most recent ones; Lakhmypriya and Varghese (2024) "Indigenous Tribes and Inclusive Engagement: An Integrated Approach for Sustainable Livelihood Into the Future" and Tripathi and Preetha (2024) "Public health infrastructure and human resources in tribal areas of India: a decadal assessment (2012–2022) with Rural Health Statistics data" – for example; have all noted that an integrative and holistic approach is required to address the issue of tribal health and also that health facilities available to the tribal people in India has not grown in line with their tribal population growth. As already acknowledged by the GOK (2025) in its Economic Review 2024 there is a need for special attention towards tribal health in Kerala. Models like CBET that ensures holistic and integrative empowerment of tribal communities by way of ensuring regular livelihood (and hence economic empowerment of tribals) as well as their socio-cultural and political empowerment by way of encouraging their own enterprises, promoting marketing mechanisms for selling indigenous goods and services etc. need to be aggressively promoted by the Government. Models like ecotourism, especially CBET, ensures greater level of foreign tourist arrivals (FTAs) and hence foreign exchange earnings also need to be encouraged by the Governments, both GOK and GOI; because larger FTAs and hence larger FEEs expedite economic growth.

- ❖ Regarding the need to aggressively promote environment-friendly tourism models like ecotourism and that CBET in Kerala for holistic tribal development, including tribal healthcare also, it may be pointed that such an initiative leads to faster economic development also, given the vast linkages – both forward and backward– with numerous other sectors including housing and real estate sector. Huge employment creation as well as faster GDP growth occurs along with tribal development and tribal welfare. This fact is further supported by the ground reality that FTAs to Kerala (and hence FEEs to Kerala too) has not even attained the pre-Covid (2019) level even though Kerala's DTAs (domestic tourist arrivals) has surpassed 2019 level. In fact, even globally, the situation of tourism is not very encouraging in respect of international tourist arrivals (Figure II) and India is no exception.

Figure II: Trend in International Tourist Arrivals (Million) and Tourism Revenues (USD Billion)

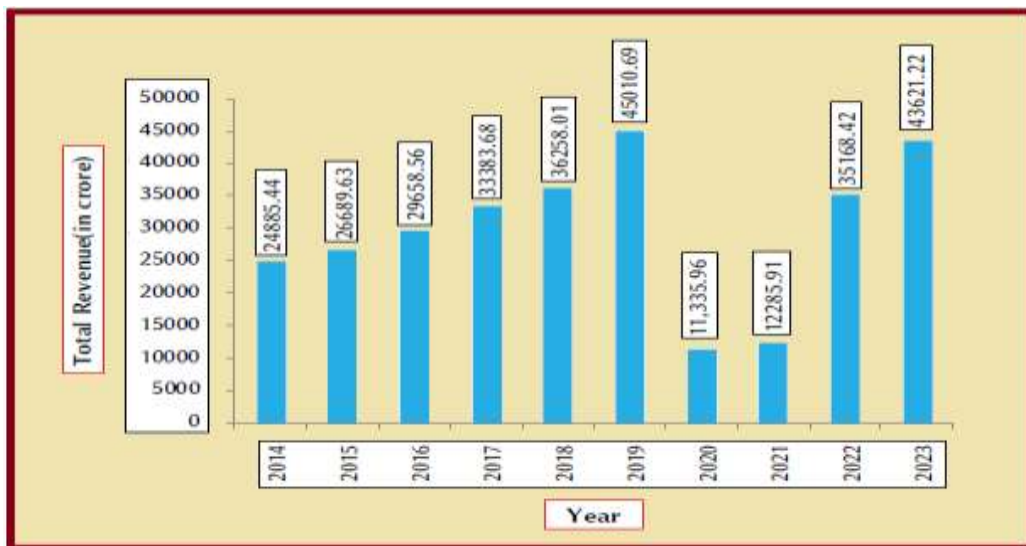
Source: Adapted from *Kurukshetra* (2022), June. p. 38. (Based on UNWTO data)

- ❖ As in the case of global tourism (Figure II) as well as Indian tourism in general, Kerala tourism is also yet to catch up with the pre-Covid levels in respect of FTAs and FEEs. The case of Kerala tourism is particularly vulnerable and the State's performance has been very poor in improving FTAs or FTVs (Foreign Tourist Visits) and hence in garnering more FEEs to the State. (Figure III)

Figure III: Trend in FTAs (or FTVs) to Kerala and India as a whole

Source: Govt. of Kerala (2025), *Economic Review 2024*, Jan. p. 293.

- ❖ Primarily because of the poor FTAs (or FTVs) to Kerala and hence poor FEEs too, the total tourism earnings of Kerala (Rs. Crore) as of 2023– the year upto which statistics are available as of Jan 2025 – is still lower than the pre-Covid level (2019). It may also be noted that while there has been consistent growth in tourism earnings, throughout the period; the only aberration being in 2020 due to Covid-19. The current situation suggests more aggressive promotion of sustainable and environment-friendly tourism models like ecotourism, especially CBET. Accordingly, the tourism earnings can be improved and along with that faster economic development and employment creation can be attained too. The case of tribal development, including tribal healthcare, can be done more meaningfully. (Figure IV).

Figure IV: Total Tourism Earnings of Kerala State (2014 to 2023) (Rs. in Crore)

Source: Govt. of Kerala (2025), *Economic Review 2024*, Jan. p. 298.

- ❖ In this post-Covid scenario in Kerala, aggressive tourism marketing is an imperative rather than a choice. As noted by Ashley, C. and Lafrnchi, C. (1997) In Scheyvens, R. (2002), *Tourism for Development: Empowering Communities*, tourism plays a key role in community empowerment and this remark is especially relevant in respect of Kerala tourism today. So also, ecotourism model, especially CBET is very conducive for tribal development. The case of tribal healthcare needs to be addressed from the overall perspective of tribal welfare including tribal housing etc.

4. CONCLUDING REMARKS

In short, in the context of tribal healthcare in Kerala, as rightly pointed by the State Government in its latest report (Jan. 2025) *Economic Review 2024*, there is a need for special attention. The case of tribal healthcare should not be at the cost of their unique living and working environments as well as traditional customs and practices. Models like CBET that ensures the overall development of tribals need to be encouraged. Improvement in housing conditions, protection of their unique natural habitats etc. are really important. Environment-friendly models like ecotourism in destinations like Periyar Tiger Reserve (PTR), Vazhachal (near Chalakudy in Trichur District) in Kerala State should be revived by the Government. ICT-based interventions like e-health are very advisable in the Kerala context as Kerala is striving to turn itself into a knowledge economy. The most significant benefit is that the above initiatives can expedite Kerala's economic development which is very much essential in the ongoing post-Covid scenario. As a natural continuation of the present study the suitability of CBET for tribal development in Kerala may be analysed in detail, because such studies in the ongoing post-Covid era are scarce.

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