

**POVERTY AND MORBIDITY- A STUDY OF
TRIBAL COMMUNITIES IN KERALA**

Thesis submitted to

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for the award of the Degree of

Doctor of Philosophy

Under the Faculty of Social Sciences

by

NALINAM. M

(Reg.No.3669)

Under the guidance of

Prof. (Dr.) S. HARIKUMAR



DEPARTMENT OF APPLIED ECONOMICS

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

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***Poverty and Morbidity- A Study of Tribal Communities
in Kerala***

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by

Nalinam.M

Research Scholar

Department of Applied Economics

Cochin University of Science and Technology

Kerala, India

email: nalin.nalinam@gmail.com

Supervising Guide

Prof. (Dr.) S.Harikumar

Professor

Department of Applied Economics

Cochin University of Science and Technology

Kerala, India

email: vinvij2003@gmail.com

shari@cusat.ac.in

Department of Applied Economics

Cochin University of Science and Technology

Kochi-682022, Kerala, India

January 2019

DEPARTMENT OF APPLIED ECONOMICS
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
KOCHI-682022, KERALA, S. INDIA

Phone: 0484-2576030, 2862561
Email: appliedeconomics@cusat.ac.in

Dr. S.HARIKUMAR

Professor

The word "Certificate" is written in a decorative, red, gothic-style font with a large initial 'C'.

This is to certify that the Ph.D thesis entitled “**Poverty and Morbidity – A Study of Tribal Communities in Kerala**” is a bonafide record of research work done by Smt.Nalinam. M (Reg:no:3669) under my supervision and guidance in the Department of Applied Economics in partial fulfilment of the requirements for the Degree of Doctor of Philosophy of Cochin University of Science and Technology.

The thesis is an original piece of research and has not formed the basis for award of any degree, diploma, associate ship, fellowship, or other similar title of any other University or Board and is worth submitting for the award of Doctor of Philosophy under the Faculty of Social Sciences of Cochin University of Science and Technology. All the relevant corrections and modifications suggested by the audience during the pre-synopsis seminar and recommended by the Doctoral committee have been incorporated in the thesis.

Dr. S. Harikumar
(Supervising Guide)

Kochi
21-01-2019

Declaration

I hereby declare that the thesis entitled “**Poverty and Morbidity – A Study of Tribal Communities in Kerala**” submitted to the Cochin University of Science and Technology, Kochi-22, for the award of the Degree of Doctor of Philosophy under the faculty of Social Sciences, is the record of bonafide research work done by me under the supervision and guidance of Dr.S.Harikumar, Professor, Department of Applied Economics, Kochi-22. I further declare that this thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other title of recognition.

Nalinam.M

Kochi

21-01-2019

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Contents

Chapter-1

Introduction.....	1-11
1.1 Introduction.....	1
1.2 Importance of the study.....	3
1.3 Statement of the Problem.....	4
1.4 Objectives of the study.....	7
1.5 Hypothesis of the study.....	7
1.6 Methodology.....	8
1.7 Analysis of the study.....	9
1.8 Limitation of the study.....	9
1.9 Chapter scheme.....	9
References.....	11

Chapter-2

Review of Literature.....	12-56
2.1 Review of Literature.....	12
2.1.1 Socio –Economic and Demographic Studies on Tribes.....	13
2.1.2 Education related Studies on Tribes.....	16
2.1.3 Employment and Income related Studies on Tribes.....	21
2.1.4 Study on land alienations among the Tribes.....	24
2.1.5 Poverty related Studies on Tribes.....	27
2.1.6 Health and Nutritional status related Studies on the Tribes.....	30
2.1.7 Research Gap.....	39
References.....	40

Chapter-3

Theoretical Frame Work.....	57-82
3.1 Sen Index of Poverty.....	57
3.2 Human Poverty Index.....	58
3.3 Poverty Entitlement, Functioning, Being and Wellbeing.....	59
3.4 The Capability Approach and Poverty Analysis.....	64
3.5 Sen's Four "Limitations" of the Entitlement Approach.....	67
3.6 Multidimensional Poverty Index.....	67
3.6.1 Superiority of MPI compared to Capability Approach.....	69
3.6.2 Importance of Multidimensional Poverty Index in the Study.....	71
3.6.3 Methodological weakness of MPI.....	71
3.6.4 Limitations of the MPI.....	72
3.7 Poverty and Health Status.....	73
3.8 Poverty and Health Framework.....	75
References.....	79

Chapter-4

Tribal Economy: an Overview.....	83-159
4.1 Introduction.....	83
4.2 A Brief History of Tribes in Kerala.....	85
4.3 Primitive Tribal Groups in Kerala State.....	94
4.4 Educational Status of Tribes in Kerala.....	95
4.5 Employment Status of Scheduled Tribe Population.....	114

4.6	Land Alienation.....	118
4.7	Income Status of Tribes in Kerala.....	123
4.8	Infrastructure facilities of Tribal Households in Kerala.....	125
4.8.1	Housing Conditions.....	125
4.9	Poverty Status among Tribes in Kerala.....	132
4.10	Health Status of Tribes in Kerala.....	135
4.11	The intensity of the Tribal problems in Attappadi.....	150
4.11.1	Incidence and Intensity of Health and Nutritional Problems in Attappadi.....	151
4.11.2	Causes of Malnutrition Deaths.....	152
	References.....	154

Chapter-5

Socio Economic Conditions of Tribals.....	160-185
5.1 Demographic Particulars.....	160
5.2 Social conditions of tribes.....	175
5.3 Details of Land and Assets.....	179
References.....	185

Chapter-6

Poverty.....	186-220
6.1 Introduction.....	186
6.1.1 Chronic illnesses.....	187

6.1.2	Acute illnesses.....	188
6.1.3	Scaling of Multidimensional Poverty Index.....	193
6.1.3.1	Scaling of Poverty- based on Multidimensional Poverty Index.....	193
6.1.4	Scaling of Poverty on the Basis of Average intensity of Deprivation.....	194
6.1.5	Scaling of Poverty on the basis of MPI value.....	194
6.1.6	Ranking of Tribal communities and Districts on the basis of MPI.....	195
6.1.7	Ranking of Tribes on the basis of Deprivation score and Morbidity.....	196
6.2	To study the extent of poverty.....	198
6.3	To find the relationship between poverty and its Determinants.....	201
6.3.1	Logistic Regression Model.....	202
6.4	Housing conditions of Tribal Community.....	205
	References.....	220

Chapter-7

Health Status.....	221-279	
7.1	Introduction.....	221
7.2	To Analyse Health Status of Tribal Population.....	226
7.2.1	Factor analysis.....	227
7.2.2	Correlation Among Health Status Determinants.....	227

7.2.3 Suitability of Model.....	228
7.2.4 Extraction of Factors.....	229
7.3 To Identify Nature, Pattern and causes of Tribal Morbidity.....	231
7.4 Living Practices Influence Health Aspects of Tribal Community.....	241
7.5 Health Aspects of the Tribal community.....	250
7.6 Details of Women, Children and Aged persons.....	250
7.7 Causes for mortality.....	271
References.....	277

Chapter-8

Major Findings and Conclusion.....	280-296
8.1 Major Findings.....	280
8.2 Conclusion.....	296
References.....	297-324

Appendix

Interview Schedule

Publication

LIST OF TABLES

Table 1.1	Sample Distribution	8
Table 3.1	Dimensions and Indicators of Multi-dimensional Poverty Index	68
Table 4.1	Comparison of Population Density and Sex Ratio of Kerala with Wayanad, Idukki and Palakkad Districts	86
Table 4.2	Population and Sex Ratios of Major Tribes in Kerala	87
Table 4.3	Comparisons of Demographic Features of Kerala with Wayanad, Idukki and Palakkad Districts	88
Table 4.4	District-wise Distribution of Tribal Population in Kerala	91
Table 4.5	Population of ST communities	93
Table 4.6	Age structure of Population	94
Table 4.7	Primitive Tribal communities in Kerala	95
Table 4.8	Literacy Rates of Tribes	97
Table 4.9	Literacy Rate of Primitive Tribes in Kerala	97
Table 4.10	Literacy Rates among Tribes in Kerala	98
Table 4.11	Educational Status	98
Table 4.12	Educational Institutions	99
Table 4.13	Educational Dropout Rate	100
Table 4.14	Educational status of 15-59 age group of the unemployed	100
Table 4.15	Technical Education of Unemployed (15-59 years)	101
Table 4.16	Literacy Rates of Kerala in Wayanad, Idukki and Palakkad districts	102
Table 4.17	Block wise Educational status of Tribes in Wayanad District	104
Table 4.18	Block wise Educational Status of Tribes in Idukki District	106

Table 4.19	Block wise Educational Status of Tribes in Palakkad Districts	109
Table 4.20	Community-wise Dropout Rate of School Students (in Per cent)	112
Table 4.21	Literacy of Scheduled Tribes and General State Average	112
Table 4.22	Gender-wise General and ST Literacy Rate	113
Table 4.23	Literacy Rates among Social Groups	113
Table 4.24	Enrolment of ST students for Undergraduate and Postgraduate Courses in Kerala	114
Table 4.25	Employment Status (Above 5 years)	116
Table 4.26	Skilled labourers	116
Table 4.27	Agriculture and related information	117
Table 4.28	Unemployed (15-59 years) among the skilled labourers	118
Table 4.29	Unemployed in the age group of 15-59	118
Table 4.30	Mode in which land acquired by the tribes	120
Table 4.31	Area of Land acquired by Tribes	120
Table 4.32	Details of Tribes those who have lost their land	121
Table 4.33	Households of tribes having land without any legal document	121
Table 4.34	Extent of land alienated from Adivasis was published in the government report of 1982.	122
Table 4.35	Tribal hamlets situated nearer forest area	123
Table 4.36	Details of tribes who get pension	123
Table 4.37	Membership in co-operative credit society and insurance coverage	124
Table 4.38	Ownership of house	128
Table 4.39	Financial support of own houses	128
Table 4.40	Conditions and facilities of own houses	129

Table 4.41	Information regarding Landless, homeless and available houses	129
Table 4.42	Housing conditions of special preference women	130
Table 4.43	Drinking water facilities within the tribal hamlets	130
Table 4.44	Availability of Electricity within the tribal hamlet	131
Table 4.45	Energy utilisation	131
Table 4.46	Tribal hamlet without road facilities	132
Table 4.47	Poverty among tribes in Kerala	134
Table 4.48	Incidence of Poverty among Different Sections in Kerala	134
Table 4.49	Employment status and food consumption among tribes in Kerala	142
Table 4.50	Malnutrition and Employment	144
Table 4.51	Malnutrition and Employment	146
Table 4.52	Details of households where vaccination is received by less than 5 year old children	147
Table 5.1	Age structure	160
Table 5.2	Gender	161
Table 5.3	Marital status	162
Table 5.4	Educational status	163
Table 5.5	Employment status	165
Table 5.6	Monthly income of family	166
Table 5.7	Amount of monthly medical expenditure	168
Table 5.8	Other Expenditure in the Family	170
Table 5.9	Debt in the family	171
Table 5.10	Reasons for borrowing	172
Table 5.11	Source of borrowing	174
Table 5.12	Ration card ownership	175
Table 5.13	Purchase of items from ration shop	176

Table 5.14	Details of Pension received by the household members	177
Table 5.15	Kudumbashree activities	178
Table 5.16	Land ownership	179
Table 5.17	Size of owner ship land (in cents)	180
Table 5.18	Ownership of land	182
Table 5.19	Asset ownership	183
Table 6.1	Showing Multidimensional Poverty Index	188
Table: 6.2	Ranking of Tribal community based on mean deprivation score, mean chronic illness and mean acute illness	196
Table 6.3	Group Statistics and Test of Equality for the Estimation of Sample	199
Table 6.4	Results of Logistic regression model	203
Table 6.5	Dwelling unit	205
Table 6.6	Assistance received for Construction of Houses	206
Table 6.7	Type of housing	207
Table 6.8	Type of floor	209
Table 6.9	Number of rooms available in the houses	210
Table 6.10	Separate kitchen	211
Table 6.11	Square feet of houses	212
Table 6.12	Primary source of energy for cooking	213
Table 6.13	Energy for lighting	214
Table 6.14	Major source of drinking water	216
Table 6.15	Distance to the source of water	217
Table 6.16	Quality of water	219
Table 7.1	Results of Stepwise Discriminant Analysis	222
Table 7.2	Variables in the Analysis	223
Table 7.3	Summary of Canonical Discriminant Functions	223

Table 7.4	Standardized Canonical Discriminant Function	
	Coefficients	224
Table 7.5	Structure Matrixes	224
Table 7.6	Canonical Discriminant Function Coefficients	224
Table 7.7	Association between Mean Deprivation Score and	225
	Variables: Chi- square Analysis	
Table 7.8	Association between Tribe and Morbidity: Chi- square	225
	analysis	
Table 7.9	Association between District and Morbidity: Chi-square	226
	analysis	
Table 7.10	Rotated Component Matrix	228
Table 7.11	KMO and Bartlett's Test of sphericity	229
Table 7.1 2	Component Transformation Matrix	230
Table 7.13	Communicable diseases among tribes of Wayanad,	232
	Idukki and Palakkad district	
Table 7.14	Permanent illness among tribes of Wayanad, Idukki and	234
	Palakkad district	
Table 7.15	Age wise distribution of Morbidity	237
Table 7.16	Mean daily calorie intake	239
Table 7.17	Incidence of Smoking	241
Table 7.18	Use of Alcohol or other intoxicants	242
Table 7.19	Water Consumption	243
Table 7.20	Bath room Facility of tribal households	244
Table 7.21	Type of Bath room	245
Table 7.22	Place of bath	246
Table 7.23	Latrine facility	247
Table 7.24	Type of latrine used	248
Table 7.25	Condition of latrine	249
Table 7.26	Daily calorie intake of household members in Wayanad	250

Table 7.27	Showing Average daily calorie intake of Tribal communities	252
Table 7.28	Daily iron intake of household members	254
Table 7.29	Type of morbidity among members	255
Table 7.30	Access to Hospitals	256
Table 7.31	Period of illness	257
Table 7.32	Period of ailment	258
Table 7.33	Details of hospitalized patients in the household	259
Table 7.34	Children less than 5 years received all necessary vaccination	260
Table 7.35	Number of women aged 18-49 who had given birth to children	261
Table 7.36	Place of birth	262
Table 7.37	Birth interval of children	263
Table 7.38	Duration of breast feed for their first child	264
Table 7.39	Reason for stopping breast feeding	265
Table 7.40	Women faced abortion any time	266
Table 7.41	Reason for abortion	267
Table 7.42	Women aged 18 -49 get all maternity services from Government department	268
Table 7.43	Children less than 5 years going to anganwadi	269
Table 7.44	Persons aged 65 and above have physical mobility	270
Table 7.45	Details of mortality during the last 5 years	270
Table 7.46	Details of Infant Mortality Rate from Attapadi Block Panchayat of Palakkad District	272
Table 7.47	Time period of living	273
Table 7.48	Cause of Death	273

LIST OF FIGURES

Figure 1.1	Chapter Scheme	10
Figure 3.1	Poverty and Health Framework	75

LIST OF ACRONYMS

AHADS	-	Attapadi Hill Area Development Society
AIDS	-	Acquired Immune Deficiency Syndrome
BA	-	Bachelor of Arts
BAMS	-	Bachelor of Ayurveda Medicine and Surgery
BPL	-	Below Poverty Line
BSC	-	Bachelor of Science
B.TECH	-	Bachelor of Technology
CAG	-	Comptroller and Auditor General
CEE	-	Commissioner of Entrance Examinations
CEO	-	Chronic Energy Deficiency
DI	-	Deprivation Index
DPI	-	Department of Public Information
EFA	-	Exploratory Factor Analysis
FC	-	Forward Caste
GDI	-	Gender Development Index
GLV	-	Green Leafy Vegetables
GOK	-	Government of Kerala
GOI	-	Government of India
GOVT	-	Government
HDI	-	Human Development Index
HDR	-	Human Development Report

HIV	-	Human Immunodeficiency Virus
HPI	-	Human Poverty Index
ICDS	-	Integrated Child Development Services
ICMR	-	Indian Council of Medical Research
IIPS	-	International Institute of Population
IMR	-	Infant Mortality Rate
ITDP	-	Integrated Tribal Development Project
KILA	-	Kerala Institute of Local Administration
KMO	-	Kaiser Meyer Olkin
KIRTADS	-	Kerala Institute of Research Training and Development Studies of Scheduled Castes and Scheduled Tribes
LPG	-	Liquefied Petroleum Gas
MA	-	Master of Arts
M –COM	-	Master of Commerce
MGNREGA	-	Mahatma Gandhi National Rural Employment Guarantee Act
MPCE	-	Monthly Per capita Expenditure
MPI	-	Multi-Dimensional Poverty Index
M.PHIL	-	Master of Philosophy
MSC	-	Master of Science
NFHS	-	National Family Health Survey
NGO	-	Non-Governmental Organisation
NIPCCD	-	National Institute of Public Cooperation and Child Development

NNMB	-	National Nutrition Monitoring Bureau
NREGA	-	National Rural Employment Guarantee Act
NRHM	-	National Rural Health Mission
NSS	-	National Sample Survey
OBC	-	Other Backward Caste
OEC	-	Other Eligible Communities
OECD	-	Organisation for Economic Co-operation and Development
OPHI	-	Oxford Poverty and Human Development Initiative
PCA	-	Permanent Component Analysis
PEM	-	Protein Energy Malnutrition
PH.D	-	Doctor of Philosophy
PQLI	-	Physical Quality of Life Index
PTG	-	Primitive Tribal Group
RDI	-	Recommended Dietary Intake
SC	-	Scheduled Caste
SLI	-	Standard of Living Index
SSLC	-	Secondary School Leaving Certificate
ST	-	Scheduled Tribe
TB	-	Tuberculosis
TBA	-	Traditional Birth Attendants
TDO	-	Tribal Development Office
TSP	-	Tribal Sub Plan
TV	-	Television

UN	-	United Nations
UNDP	-	United Nations Development Programme
UNICEF	-	United Nations International Children Emergency Fund
UK	-	United Kingdom
WHO	-	World Health Organization

1.1 Introduction

The issue of poverty is the core of the development discourse in India. As per the official estimates for 2011-12 (Planning Commission, Government of India), around 270 million people or over one-fifth of India's population is still categorized as living below the most basic food-requirement. A study done by The Oxford Poverty and Human Development Initiative's Global Multidimensional Poverty Index of 2017 gives the insight that the majority of the countries with the maximum poor population come from South Asian countries and the Sub Saharan African countries trail behind this. Based on the index, almost 48 per cent of the multi dimensionally poor are children in the age group of 0-17 years, about 1.45 billion population could be termed as multi- dimensionally poor, about 689 million of the population are children and 31 per cent of these children live in India.

Based on the statistics 2015 data, 21.9 per cent of Indian population falls below the national poverty line. India's poverty is not just about people who are hungry. It is about people who are malnourished, acutely prone to health vulnerabilities and illness, unemployed or underemployed with poor productivity levels, homeless and invariably living an insecure life, etc. It is about households that are poorly endowed, and have a high dependency burden are situated in habitats with limited, if any, coverage of civic amenities and constantly threatened by environment

sustainability concerns. Indeed India's poverty is about population groups that are powerless, socially marginalised and can be easily disempowered and dispossessed of their entitlements, i.e., commodity bundles over which an individual or family can establish command using their endowments, including labour, because of their peculiar circumstances (Sen,1981). Poverty is a multi-dimensional phenomenon. Education, health (including reproductive health) nutrition, water and sanitation, employment, social, political participation are additional dimensions in the deprivation of capability and empowerment (Sen, 1999).

OPHI report published in 2016 shows that nearly 30 per cent of people (1.6 billion) are identified as multi-dimensionally poor. The poorest region in South Asia is Bihar, followed by 'South Afghanistan and Baluchistan of Pakistan (Jose, 2017). Poverty is also about certain regions that continue to be underdeveloped and poorly governed. There are more multi-dimensionally poor people (421 million) in the eight poorest Indian States (Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal than in 26 poorest African countries combined 410 million (Jose, 2017).

Poverty limits access to food and basic services, such as health and education which results in poor health and shorter life expectancy. Poor health in turn leads to reduced human development and poverty, thereby completing the vicious circle of poverty, malnutrition, lack of human development, poor health and poverty. Poverty influences health outcomes by limiting access to modern health facilities. Since poor households tend to spend a higher proportion of their income on food, the resources available for spending on health care is limited. By limiting access to food and health services, poverty tends to cause higher morbidity and mortality among the poor. The relatively high levels of morbidity and mortality among the poor leave many households without an income earner, thus exacerbating the problems associated with poverty.

The determinants of higher ill-health among the poor are manifold and interrelated (Bloom and Canning, 2001). It is impossible to understand health without taking into account levels of nutrition and its attendant factors: malnutrition and extreme hunger; over-nutrition, obesity and diabetes; and the broader political-economic, environmental and agronomic questions of food and water security. The connectedness comes from the fact that hunger and malnutrition (whether malnutrition and low calorie intake or over-nutrition and obesity) are key determinants of ill-health morbidity and mortality. Poor health and its considerable economic consequences are major obstacles to the eradication of poverty in poor rural areas and among disadvantaged population groups. Moreover, the significant costs of health care are met by out of pocket expenditure (private spending) which further adds to the impoverishment of the poor in the developing world (Wagstaff and Claeson, 2004). Tribes are one of the marginalized communities who are caught under the vicious circle of poverty. Poverty among tribal communities leads to poor health, poor education and poor living standards.

1.2 Importance of the Study

Poverty, hunger, malnutrition, morbidity and mortality are so inexorably intertwined that they reinforce each other and hinder human development and economic growth (Kannan, Navaneetham et al., 2008). In the case of tribes in Kerala, a majority of them are under the trap of poverty with lack of health, education and living standards. Infant mortality and malnutrition are prevalent among the tribes in Kerala. Lower levels of higher education and higher educational dropouts are other threats faced among the tribal communities. Tribal communities in Kerala are still backward in certain essential indicators as majority of them have no access to electricity, safe drinking water, better sanitation facilities, good floor, cooking facilities and asset ownerships which lead to prevalence of malnutrition. It is an indication of inability to get the required intake and balanced diet for a healthy living. Malnutrition is one of the important factors that plays a major role in spreading infectious diseases. Poverty coupled with malnutrition is the major reason

for increasing morbidity among tribes in Kerala. Those who suffer from malnutrition in general are more vulnerable to various types of diseases. The problems relating to malnutrition and anaemia are acute among pregnant and lactating women among tribes in Kerala. Most of the women had undergone abortion more than once. Premature birth and low birth weight are the most important reasons for the alarming rate of neonatal mortality. Most children weigh only 600 to 800 grams at birth. This situation can be seen especially in Attapadi of Palakkad district. Later it is reported in Wayanad district as it is the largest tribal populated district in Kerala. The majority of malnourished children in Wayanad are reported among the tribes residing in Thirunelli and Mananthavadi panchayat (NFHS, 2017). Cases of 15 infant mortality were reported in Attapadi during the year 2018. Malnutrition and anemia among pregnant women lead to Intra Uterine Growth Retardation among unborn children. In the year 2013 about 30 children died within hours/days of their birth in Attapadi block panchayat of Palakkad district. Lower income levels, lack of access to medical care, lack of health knowledge regarding preventing and controlling infectious diseases, etc. will affect the health status of tribal population. Conditions of scheduled tribes in Kerala are different from others like scheduled caste, OBC, and general communities. As poverty threatened the life of tribal communities, it leads to lower food intake, coupled with morbidity like acute and chronic illness causing to poor health status and lower life expectancy. As a healthy population is the basic requirement for the development of an economy, the present study is significant as it tries to identify the extent of poverty and its adverse health outcomes among the tribal communities in the important districts of Kerala.

1.3 Statement of the Problem

Though Kerala has achieved outstanding progress in human development, our understanding, however, is that all areas, all sectors and all sections of people have not evenly experienced the gains accruing from this progress. However, as in all distributions, the Kerala Model also has its 'outliers', especially in the case of marginalised group.

In India, indigenous populations, known as *Adivasi* or Scheduled Tribes (STs), are among the poorest and most marginalized groups. 'Deprived' scheduled tribe groups tend to display high levels of resignation and lack the capacity to aspire; consequently their health perceptions often do not adequately correspond to their real health needs. Moreover, similar to indigenous populations elsewhere, scheduled tribes often have little opportunity to voice perspectives framed within their own cultural world views. National level data show that scheduled tribes have higher mortality rates than non-scheduled tribes, even after adjusting for living standards. Epidemiological studies have concluded that ST populations face more risks of ill health, compared to other social groups; among other things, they are more likely to smoke and consume alcohol, and they have higher rates of morbidity. Despite more than 50 years of affirmative action by the Indian government, large disparities in health and well-being persist between scheduled tribes and the rest of the population.

Scheduled tribes in Kerala present a fascinating panorama with its rich cultural heritage and love for nature on the one hand and a disturbing spectacle on the other, of their being exploited and often ruthlessly uprooted from their habitats and replanted in the arid land of civilization in the name of marginalization. The tribal population is socially marginalised and economically vulnerable in the society. Poverty, morbidity, malnutrition, illiteracy, ill treatment and exploitation are the major problems faced by tribes in Kerala. Poverty, squalor and diseases go together. Tribes are one of the most backward groups who are in perpetual poverty. In poverty, man is threatened by malnutrition and diseases. Health status of tribes in Kerala is distressing. It is observed that they are caught in the vicious circle of poverty, morbidity and malnutrition.

Diseases due to malnutrition, unhygienic conditions, infectious-TB, pneumonia, respiratory diseases, habitual, genetic, lifestyle diseases, etc. are increasingly seen among the tribes in Kerala. The health status of tribes in Wayanad district shows that 46.61 per cent of tribes in the district have suffered from physical disability. More than 11 per cent of tribes have more than one disability, 9.28 per

cent of tribes have mental disabilities, 7.87 per cent tribes have lack of eye sight, 4.75 per cent of them are deaf and 3.37 are dumb, 2.41 per cent tribes have mental illness, 2.63 per cent are suffer from epilepsy and 11.89 per cent of tribes have suffered from other types of diseases (KILA Survey Report, 2008). In Idukki district, 56.9 per cent of tribes have suffered from physical and mental disabilities. More than 41 per cent of tribes have more than one disability. More than 14 per cent are blind, 9.8 per cent deaf, 7.13 per cent dumb 12.40 per cent suffer mental illness, and the remaining 15 per cent suffered from other types of diseases (KILA Survey Report, 2008).

Large numbers of tribal children were born underweight and suffered from malnutrition. Malnutrition like infant mortality in the tribal hamlets has been reported in the media during the period of 2013 and death toll has reached 55 within its last six months. Infant mortality among tribal areas continued in Kerala between 2017 and 18. More than 10 cases were reported from the area. Land alienation is considered as the main reason for this pathetic situation. Recent changes owing to high levels of land alienation have resulted in reduced food consumption among the tribes, both quantitatively and qualitatively (Rajasenan and Nikitha, 2013).

The average intake of various food items by 1-3 year children of various tribal communities in Kerala shows that except roots and tubers all other food items' intake is lower than the required dietary intake (Gangadharan and Kumar, 2015). The intake of qualitative foods, such as pulses, milk and milk products, green leafy vegetables, oils and fats, sugars and jaggery was lower among tribal children in the 1-3 and 3-6 of age groups. The consumption of milk and milk products among tribes was grossly inadequate. The mean intake of cereals and millets among 4-6 year children was 161 g against the suggested level of 270g/day (Gangadharan and Kumar, 2015). The average consumption of protective and income elastic foods, such as pulses and legumes (16g Vs 35 g), milk and milk products (5.6 g Vs 250 g), fats and oils (3g Vs 25 g), GLV (8.3 g Vs 50 g) and sugar and jaggery (7.9 g Vs 40 g) were grossly inadequate, compared to the suggested levels (Gangadharan and

Kumar, 2015). The conversion of tribes from owners of land into agricultural workers with the wage rate below subsistence level made the situation shocking with high levels of morbidity and mortality. (Rajasenana and Nikitha, 2013). Maternal anaemia and deliveries by untrained persons pose problems. Tribal mother's average intake of cereals and millets was 273 g which was lower than the RDI of 410 g. The mean daily intake of pulses and legumes was 12.5 g/day as against RDI of 40 g; barring other vegetables, the intake of all other food stuffs was below the recommended level. Lack of nutritious food and proper health care for tribal women during pregnancy have led to such a devastating situation. Most tribal women are anaemic because of this proper intake of foods. The condition is acute among pregnant women and lactating mothers (Gangadharan and Kumar, 2015). Improvement in the health and nutritional status has been one of the major thrust areas for the social development of the tribes in Kerala. In this backdrop, the present study seeks to examine the problem of poverty, malnutrition and morbidity prevailing among the tribal communities of three major districts in Kerala, namely Wayanad, Idukki and Palakkad.

1.4 Objectives of the Study

1. To study the depth of poverty among tribal communities in Kerala.
2. To identify determinants of poverty among the tribal communities in Kerala
3. To analyse health status of tribal communities in Kerala.
4. To identify the nature, pattern and causes of morbidity among tribal communities

1.5 Hypothesis of the Study

1. There is relationship between poverty and morbidity among tribal communities in Kerala.
2. There is relationship between poverty and health status of tribal communities.

1.6 Methodology

The study highlights the problems of poverty, malnutrition and morbidity among the tribal communities in the districts of Wayanad, Idukki and Palakkad in Kerala. According to 2011 census, Wayanad has the highest tribal population, followed by Idukki and Palakkad (31.24 per cent, 11.51 per cent and 10.10 per cent). The study uses both primary and secondary data. For primary data collection multi stage proportional sampling is followed. From each selected districts one block panchayat was selected at random. The selected blocks are Mananthavadi from Wayanad, Adimali from Idukki and Attapadi from Palakkad. From each block, gramapanchayat with highest tribal settlement (number of households) was selected. From each gramapanchayat, tribal households were identified on the basis of concentration of communities and following communities were identified from Wayanad (Adiya, Kattunaikyan, Paniya, Kurichyar and Uralikurumar), three communities from Idukki (Mannan, Muthuvan and Malayarayan) and two from Palakkad (Irular and Mudugar). The sample households were selected at random. From each districts 150 households were selected i.e. 450 households. The households were surveyed with the help of an interview schedule. Community- wise sample size, in each district, is given in the table 1.1

Table 1.1
Sample Distribution

Sl No	District	Tribal communities	Number of Households
1		Adiya	54
2		Kattunaikyan	42
3		Paniya	23
4		Kurichyar	16
5		Uralikurumar	15
	Wayanad		150
6		Mannan	64
7		Muthuvan	59
8		Malayarayan Christian	27
	Idukki		150
9		Irular	124
10		Mudugar	26
	Palakkad		150

Source: Primary data

1.7 Analysis of the Study

Discriminant analysis is used to study the extent of poverty and Wilks lambda is used to analyse group statistics and test of equality for the estimation of sample. Logistic regression model is used to find the relationship between poverty and its determinants. Chi-square analysis is used to find the association between mean deprivation score and variables. Factor analysis technique is used to analyse the health status of tribal population.

1.8 Limitation of the Study

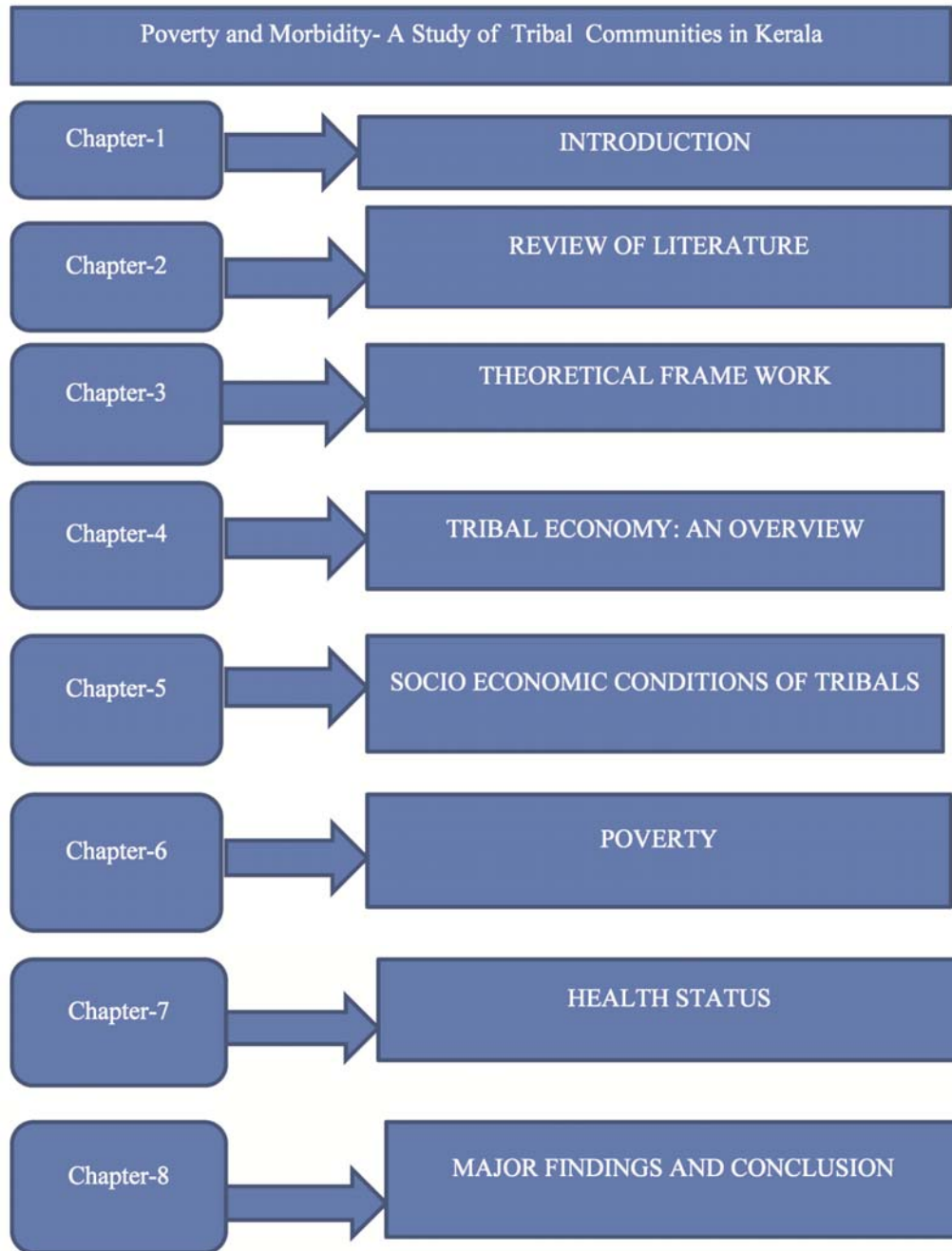
Communication became difficult and time consuming due to language barrier. Spread of communicable diseases in certain colonies leads to non-cooperation from the side of tribal promoters. Tribal promoters are reluctant to participate in data collection after 5p.m. in certain areas due to threat of wild animals. While calculating nutritional status, calorie intake is used rather than body mass index. It is difficult to take height and weight from such a huge population. It became difficult to reach certain parts of tribal colony settlement, as they are far flung from the main village or panchayat.

1.9 Chapter scheme

Entire study is divided into eight chapters. Chapter first include introduction, importance of the study, statement of the problem, objectives of the study, hypothesis of the study, methodology, analysis of the study, limitation of the study and chapter scheme. Second chapter deals with review of literature. Third chapter deals with theoretical frame work, Fourth chapter deals with tribal economy an over view. Fifth chapter include socio-economic conditions of tribal communities in Kerala. Sixth chapter deals poverty. Seventh chapter deals with health status and eight chapter include major findings of the study and conclusion.

Chapter Scheme

Fig.1.1
Chapter Scheme



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REVIEW OF LITERATURE

Kerala has achieved high social development in terms of education, health, literacy etc. But some sections of the population are still deprived of the benefits of development and are outcasts. Unequal access and distribution of the fruits of development have resulted in illiteracy, malnutrition, poor health status, gender inequalities, social exclusion, etc. This chapter is an attempt to review important literature in this connection. The studies reviewed were arranged in such a way that their significance is buttressed.

2.1 Review of Literature

Even though Kerala is a State with a high Physical Quality of Life Index (PQLI), the education, employment, health and nutritional status of some sections of the population is very low. Unequal access and unequal distribution of human capital indices result in poverty, poor health status, malnutrition, illiteracy, gender inequalities and discrimination, violation of women's rights and social exclusion, especially among the marginalised groups. Available literature reviewed gives the same conclusion.

The following literature is classified into six sections in order to focus on its significance.

2.1.1 Socio-economic and demographic studies on tribes

2.1.2 Education related studies on tribes

- 2.1.3 Employment and income related studies on tribes
- 2.1.4 Study on land alienations among the tribes
- 2.1.5 Poverty related studies on tribes
- 2.1.6 Health and nutritional status related studies among the tribes

2.1.1 Socio –Economic and Demographic Studies on Tribes

Forty eight tribes of Kerala and their socio economic and demographic features, such as their mode of living, occupation, diet, religion, taboos, marriage and rituals have been discussed by Luiz (1962). Ayyappan made studies among Nayadies of Malabar (1937) and Irular community in Kerala (1944) and related study of Irular community in (1965) the study proved that there were socio-economic changes in the Irula community. Thurston (1966) studied the changing pattern of hill tribes of Kerala. The study focussed on unravelling certain sociological and anthropological issues of tribal life. Iyer (1937) has made an ethnographic survey on Cochin tribes and tribals of Travancore and his study sheds light upon the various dimensions of tribal society.

Adima system among the aboriginal and untouchable classes of Malabar has been discussed by William, L (1951). The exploitative attitudes of the feudal lords towards adima were vividly explained by him. Status of tribal women, bonded labourer, land alienation and indebtedness were pointed out by Mathur (1977) and the study traced the socio-linguistic revolution of the tribes of Kerala. Patel (1964) studied the transformation of a large number of tribal communities into agricultural labourers and he concluded that this had rendered their economic condition deplorable.

Prakash (1980) opined that Kuruma tribe is the most advanced tribe community in South Wayanad and also discussed their interest to in education. Caste hierarchy in a tribe community has been discussed by Bose,P (1981). Thomas (1992) propounded that welfare programme initiated by the government in Attapadi had no effect on creating political socialisation. Singh (1982) pointed out that a

majority of tribal communities in India have retained their cultural characteristics and tribal communities differ from one another, in their population, patterns of distribution and cultural background due to ecological and geographical differences. Bala and Bakshi (2000) discussed the socio-economic status of several scheduled tribes inhabiting various regions of our sub-continent. The study explained that tribes lived in their own world with different life styles, customs and traditions which are quite different from those of the population in our rural and urban areas.

Srivastava (1990) explained the necessities of providing additional facilities for bringing about changes in the economic activities in the Kamar tribe of Madhya Pradesh. Kunhaman (1982) in his study discussed the inter-regional variations in the level of socio-economic development of the hill tribes of Kerala and the underlying causes for their plight.

Vidyarthi and Binay Kumar Rai (1985) in their study pointed out that increase in the pressure on land due to population growth and opening up of different mines and industries led to the emergence of non- agricultural labourers among the tribal communities. Kumar (1998) in his study explained that many tribes in Kerala have already dispersed into diversified economic activities to find their livelihood.

Bhakat (1990) in his study stated that the Indian tribes have rich knowledge about their plants and their conservation. They believed that some deities reside in the forests, have played a significant role in the preservation of plant resources down the centuries.

Mehta, B (2000) in his study pointed out that employment oriented schemes introduced in tribal areas of Rajasthan have not been utilised properly. How development reached the Bhils and Minas tribal communities has been discussed by Jain (1999). Dash and Misra (2001) examined the improvement of some infrastructural components in Phulbani district of Orissa and also the need for traditional practices for sustainable development in that area. Issues related to the traditional artisan skills of Vettakurumans have discussed by Mini (2007). Gregory, J

(2007) pointed out that the condition of Kerala tribes is better as compared to the situation of tribes at an all India level. Devan (2006) spoke about *Kundal Pani*, as it was a system of slavery under which the Paniya and Adiya tribals were compelled to work for a particular Nair or Gowdar or any other Hindu higher caste employer for a fixed term.

Kakkoth (2004) in her study on the demographic profile of an autochthonous tribe - Aranadan community of Kerala pointed out that it is one of the smallest tribal communities in Malappuram district and their population has only 254 people with 128 males and 126 females. Low sex ratio, difficulty in finding suitable girl matching age, etc perhaps drive Aranadan males to marry from outside. Poor health status and the family planning measures adopted by both males and females adversely affected their population size. The study concludes that special attention should be paid to this community to stall further shrinking of its population.

Study undertaken by KILA (2008) pointed out that there were 33 schedule tribe communities in the State and of the 40,1401 strong tribal population Paniyan community is the largest. The study also mentioned five primitive tribal groups, like Koraga community, Kattunaikyan community, Cholanaikyan community, Kurumba community and Kadar community and their total tribal population was recorded at 26,273 only.

Thachil (2016) in her study on the socio economic problems of Irular tribes in Attapadi area. It was a study about 50 kudies with 240 populace belonging to different age groups and the study pointed out that number of children within the age group of 0-6 years is very low when compared to other age groups. Base line survey report of Wayanad district (2008) sheds light on Wayanad district, as it is primarily a rural district with 96 per cent the total population living in the villages. Scheduled castes constitute four per cent and schedule tribes merely 17.7 per cent of the total population.

2.1.2 Education related Studies on Tribes

Gaspar (1987) in his study about equalisation of educational opportunities pointed out that educational attainment of females belonging to weaker social sections is very much lower than that of the males of those groups and that of the females of the advanced sections. The study concludes that abolition of socio-economic inequality necessarily calls for gender equality and that helps the development of weaker sections of society. Sundran (2005) in his study stated that the economic conditions of the tribal people can be improved through education and income generating activities for self-sufficiency. The study also speaks about the importance of vocational courses among the tribal communities.

Ramnath, M (2003) in his study stated that to live and to teach in Adivasi regions require special qualities such as openness, an interest in other cultures, a sense of inquiry and immense energy. The study done by Bineesh (1998) about the educational drop out of tribal students pointed out that stipends, scholarships, hostel accommodation, etc given to tribal children by the tribal welfare department have not been found effective. Even after providing these services many of them are reluctant to continue their studies. The study concludes that lack of motivation or change in mind-set is the real cause of their backwardness.

Malhotra (1992) in his study stated that spread of education has brought about changes among Nicobars tribal life and made the natives more receptive to new ideas. Latha and Manju (1992) discussed the cultural and school environmental factors among tribal and non-tribal pupils of Ranchi city, which are mutually exclusive for good education. Ramana (1989) pointed out that lack of infrastructure, adverse conditions of teaching learning processes, absenteeism, stagnation and wastage are major hindrances faced by the tribal communities to achieve education in Ashram schools in Andhra Pradesh. Systematic follow up is necessary among tribal children to identify their impact on learning achievements (Eswara, R, 1995).

Poverty, lack of infrastructure and illiteracy among parents were the main causes of the low enrolment of tribal children in schools of Andhra Pradesh (Rehman, 1989).

Ambasht and Rath (1995) in their study on the “effect of the households, community and school factors on the Enrolment, Retention and Achievement of Scheduled Tribes Children at Primary Level”, assessed the effect of the cluster of households and school factors on achievements of ST children. Study concluded that suitably designed research was needed to understand the effect of home background factors, such as parental attitude, parent’s education, the language spoken at home and the economic condition of the family on the ST child’s achievement, as well as factors like school learning, medium of instruction and tribal and non-tribal teachers.

Achyut,D (1991) in his study makes an experiment in the development of education, attempting a pattern of education in the tribal regions of Orissa with community ownership and participation. The study suggests that community involvement, inculcation of skills, co-curricular activities, local teacher, flexible school timings and teacher training programmes conducted on a regular basis and effective supervision are helpful in promoting tribal education.

Illiteracy and ignorance of parents adversely affected the educational dropout rate among tribal children (Kukreti and Saxena, 2004). The low achievement of tribal children was mainly due to factors like educational backwardness, unfavourable attitude of parents towards education and lack of motivation (Lekha, 1986). Hanumantha (1986) found that there was negative correlation between mother’s education and the problem of dropout among tribal children. A large proportion of the poor tribal children, on account of the rising cost of schooling and economic burden, cannot afford to go to school (Nagda, 2001).

Gaur C.B (1990) makes a study about the difference between the facilities available and facilities utilised by ST students of various sub communities of STs in Rajasthan between 1984 and 1987. The study concludes that the enrolment of tribal

children in Rajasthan during the period was high in the initial classes and low in the subsequent classes. Bhargava (1989) in his study about educational facilities for the STs of Orissa revealed that educational facilities were better in non-tribal districts than tribal districts, in terms of school building, number of schools, size of class rooms, literacy facilities, like libraries, and physical facilities like blackboards.

Culture, unimaginative educational programmes, education in non-tribal language, textbook based on non-tribal cultures and negative attitude of non-tribal teachers towards tribal students, inadequate attention to the development of tribal language are the main reasons behind the dropout among tribal students, (Kundu, 1984).

Inferiority complex among students, mobility of the parents depending on their occupations and negative attitude of parents towards girls' education, inability to make adjustments with the present educational set up, etc affected the dropout rate of the tribal children, (Subrahmanyam, 1986). Ekka (1990) in his study in Orissa among tribal children stated that educational dropout rate of tribal children is at 73.48 per cent at the primary level and 84.11 per cent at the upper primary school. The same among SC and ST children is lower than non-Scheduled Castes/ Tribes children in terms of their achievements in Language and Mathematics (Saxena, Singh and Gupta, 1995).

Backwardness among the tribals in Tamil Nadu adversely affected their children to enter the mainstream to get education (Vaidehi and Rao, 2004). Biswal (1991) pointed out that educational development of the community needs to be emphasised to enrich their culture, agriculture, health and socio-economic conditions.

Suresh (2015) in his study pointed out that economic factors like poverty and indebtedness, cultural factors, like nature of habitation, difference in dialect, medium of instruction, social factors like illiteracy of parents, lack of motivation from parents, unfavourable family environment and institutional factors, like accessibility to

schools and lack of sufficient grants and schemes among the tribals adversely affected their education.

Pavithran and Abraham (2005) discussed the necessity of providing necessary infrastructure and educational facilities, adequate sources of livelihood, healthcare and other basic facilities among tribe communities of Udayagiri Panchayat of Kannur district in Kerala.

Rajaseenan et al. (2013) in their article titled “health, education and employment in a forward, backward dichotomy” has written about 9 prominent tribes of Kerala. The study concluded that tribes with good education and employment (Malayarayan, Kuruma and Kurichya) have a better living standard and hence they can generally be termed as forward tribes, whereas those with a low or poor education, employment and living standard indicators (Paniya, Adiya, Urali, Kattunaika, Muthuvans and Irula) are categorized as backward tribes.

Study done by Kakkoth (2012) explained the issues and perceptions of educational drop out among tribal children in Kerala and listed the reasons for children from primitive tribe group discontinuing their education. The dropout of Cholanaikyan and Kattunaikyan children from Ashramam schools, is described in the report. The two Ashramam schools in Kerala are located in Palakkad and Malappuram districts. The schools in Palakkad cater to Kadar and Kurumbar and the one in Malappuram caters to Cholanaikyan, Kattunaikyan communities (Kakkoth, 2012). The study concluded that these primitive tribal communities needed to be provided relocation of a school closer to tribal hamlets in addition to special care, free boarding and lodging, providing schools exclusively for primitive tribal groups as they do not get to interact with children from other communities which fortifies their beliefs and attitudes towards formal education which they consider as unnecessary intervention into their natural life.

George (2011) in his study pointed out the inclusiveness of higher education in Kerala. The problems faced by the SC/ST students in obtaining admission,

continuing the course as well as passing the examination are included in the study. The study concludes that the growing trend of the middle class Keralites to abandon Government schools in favour of private schools has left a weak Government education system. Moreover unchecked deterioration in the quality of public education system at the school level fails to provide the required skills and knowledge to children from sociologically and economically challenged backgrounds, especially ST students. This adversely affected their admission to higher education in an environment characterized by competition and apathy to the downtrodden.

Rajasenan et al. (2010) in their study explained the under- representation of students from scheduled castes and scheduled tribes in Engineering Education in Kerala. The study reveals that the students from SC/ST communities do not figure in the top 101 ranks in professional Engineering Entrance Examination conducted by the Commissioner of Entrance Examinations (CEE), Kerala.

Bagai and Nundi (2009) study on tribal education in India has discussed the educational backwardness of tribal areas and tried to find out the reasons for the same. They identified language problem as a major concern for ST students. Their unfamiliarity of state language adversely affected their education at the pre-primary and primary level. Compared to this situation, Kerala has developed bilingual materials at district levels in Kasaragod, Wayanad, Malappuram and Palakkad (Gautam, 2003). Other problems identified or pinpointed by Bagi and Nundi are continuing teacher absenteeism in tribal schools and seasonal migration of tribes.

Paul (2013) discussed education of tribes in Kerala based on income and their livelihood. Tribal literacy, enrolment and dropout situation are included in the study and they highlight familial aspects, such as poverty, looking after younger over, and adverse family environment as major impediments to tribal education. Another important contribution of the study is the classification of tribal communities into forward and backward based on the living index.

2.1.3 Employment and Income related Studies on Tribes

Tribals of Kerala do not generally stick on to any one particular employment. They are generally absorbed in the agricultural activities. Kurichians, Kurumans, Kanikkars, Irulas, etc. are predominantly agriculturists. Paniyans, Adiyans and Mavilans are basically agricultural labourers. Kattunaikyans, Kadars, Malappandarams, Malaivedans, Malai Malassar and Aranadans are engaged in agricultural activities. Deforestation, construction of dam for hydro- electric projects and introduction of commercial plantation and large intrusion of the country men forced tribals to cease the primitive method of shifting cultivation. Stiff competition from machine made goods of rubber and plastics adversely affected their traditional skills. Moreover they seem to be very slow in assimilating the new technical know-how or changing their traditional trades or in acquiring skills in new vocational trades.

Benchmark Survey (1982) report titled 'A Benchmark Survey of Integrated Tribal Development Project' provides information on the extent of poverty among tribal households in the ITDP areas and also mentions the major livelihood activities of the tribal communities in these areas. The study reveals that there exist intercommunity disparities even in the case of agricultural labourers of Wayanad district. The survey reported that 76.08 per cent of Adiyans, 78.31 per cent of Paniyans, 39.11 per cent of Kurichyan, and 43.77 per cent of Kuruman's households were agricultural labourers. There exists an inter-community disparity in the possession of land and the occupational structure of the households among four major communities in the Mananthavady ITDP area. Velluva,S (2004) in his study pointed out that a large proportion of the households among Irular , Mudugar and Kurumbar communities of Attapadi earn their livelihood as wage labourers.

Adhikary (1990) stated that Santal tribal community in West Bengal is agriculturalists and their direct access to land is marginal. Most of them are tenants,

casual agricultural labourers and some of them also work as casual labourers in non-agricultural sectors.

The majority of tribals in Rajasthan except Mina live in remote and dense forest areas and their livelihood depends upon the forest produce and marginal agriculture (Kashyap and Kumar, 1998). To check and prevent shifting cultivation is essential for tribal development (Panda, 2009). Tribal women empowerment can be done by making them owners of land and the role of NGO to safeguard the interest of women workers especially in the unorganised rural sector has been discussed by Tripathy (2004).

Rajasenani and Rajeev (2013) in their study stated that land alienation and non-availability of forest produce lead them to unemployment even though employment generation and livelihood options are available through TSP. The study also pointed out that only 4.88 per cent tribes have secured employment in government services. Paul (2013) pointed out that there is substantial difference between tribal communities and also the employment options. Mahendra Kumar (1998) observed that in Kerala many tribes have already dispersed in to diversified economic activities to find their livelihood.

Arun et al. (2001) in their study on Biodiversity Conservation and Livelihood Issues of Tribesfolk in Periyar Tiger Reserve mentioned that the endemic fishers are exploited commercially by the traditional tribal groups, as their primary occupation is fishing. The study used this conflict between survival need and conservation of nature in the light of conservation objectives and livelihood opportunities of tribal groups.

Sadhu and Singh (1996) discussed the non-availability of credit facilities among the tribal communities, moreover they are living under community owned land, forest reserved land, etc. This adversely affected the availability of loan from commercial banks. So they have to depend upon money-lenders and traders. Rao and

Ramarao (2007) point out that the income and literacy levels of the tribals are very low and recommend sustainable income generation programmes.

Goswami (1995) in his study stated that top income class formed 13 per cent of the tribal population of Barak Valley Assam. Their per capita income was Rs 3000.00 and about three-fourth of the population has less than Rs.2000.00 . The study concluded that above five per cent of the population is living below the poverty line. Rajasenan et al.(2014) in their study stated that mean per capita household incomes for the forward castes and the OBCs or OECs have found to be Rs.5009.83 and Rs.3088.74 respectively and the backward STs earn less than one third of the incomes received by the forward communities. The study concludes that a uniform employment and income pattern do exist within the community but average MPCE is the least for the backward STs and the highest for the forward castes.

Rajasenan and Nikitha (2013) pointed out that land alienation results in livelihood threats, which in turn manifests in the form of food and nutritional insecurity among the tribes. Reservation provided in government jobs has turned out to be futile in the way of reaping the desired benefits (Rajasenan et al., 2014). There exists gender discrepancy in the average monthly earnings and males receive nearly double the amount earned by the females; but it is still far below the average monthly earnings of Rs.5824.87. It seems to be difficult in the calculation of monthly or annual income of the tribes and the consumption expenditure as their employment is seasonal in character and they are using event –based remembrance as this method is effective only to a certain extent in the case of tribes (Rajasenan and Rajeev ,2013). Among the three districts the average monthly consumption expenditure of tribes in the Wayanad, Idukki and Palakkad district lies between Rs.1000 and 2500. And the district -wise comparison shows that expenditure range of Rs.2500 -5000 is less in Palakkad than in Wayanad and Idukki.

Rajaseenan and Abraham (2013) discussed the varied livelihood issues of tribes, such as over dependence on agriculture, seasonal nature of employment, lack of skills, health and nutritional aspects, geographical barriers, cultures and belief, etc. Those who have secured government jobs from Kurumans, Kurichyan, and Urali communities are 11.4 per cent, eight per cent and 3.6 per cent respectively. And the study revealed that no tribal members from Kattunaikyan, Adiya and Paniya community had achieved the status of secure government jobs. The average monthly income earned by the six communities Kurumans, Kurichyan, Kattunaikyans, Adiyans, Paniyan and Urali- show that Kurumans and Kurichyan receive more than the mean monthly income of Rs.2038.27, Kattunaikyan and the Adiyans earn much below the same. Agriculture labour has been the important source of employment of tribes in Wayanad and it is reported that only 3.7 per cent of tribes have acquired secure government jobs.

2.1.4 Study on land alienations among the Tribes.

Mathur (1975) and Kunhaman (1981) have discussed the land alienation and the livelihood issues of tribal communities in Kerala. Kunhaman's work is concentrated on the tribal communities in Attappadi, and Mathur focused upon tribals of Kerala in general. The reasons for land alienation and the ineffectiveness of the state machinery in combating alienation of tribal land are discussed in both the works. Mathur in his study tries to link the levels of indebtedness among tribals in Kerala to the problem of land alienation faced by them. Both the studies make the same point that deteriorating traditional livelihood means of tribal communities, which were primarily forest and land - based. The studies seem to suggest that the one of the outcomes of land alienation is the forced dependence on newer livelihood options that require tribal communities to have different skill sets. But their socio cultural structure prevents them from accepting the same. Incomplete and unsatisfactory land records among the tribes have merely aggravated the problem of land alienation.

Causes of land alienation and its impact on Kadu Kuruba tribe in Karnataka have been discussed by Jyothi (2016). The laws which have been promulgated to protect the tribal land interests of scheduled areas of Andhra Pradesh are not effectively implemented resulting in external appropriation of tribal lands in the Scheduled Areas (Rao, 2014). Moreover the size of land-holdings owned by the household determines its economic and social position in the society (Sadhu and Singh, 1996). The analysis of the problems in three tribal villages in Andhra Pradesh shows that the process of land alienation is not an 'accidental' one (Rao, 1987).

Murty (2005) stated that the landless tribal households in Andhra Pradesh formed 31.38 per cent of the total tribal households and private owned land constitute 68.62 per cent in 2002-03. Rupavath (2009) stated that the processes of land alienation are due to the entry of non-tribal, commoditization of land and introduction of cash crops.

Kumar and Choudhary (2005) in their study explained that though land and land based resources are central to the livelihoods of tribal people, they have poor access to land and forests. Transfer of land from tribal to non-tribals, the form of lease and mortgage, eviction of the tribals from their land which is resorted to by non-tribals taking advantage of lack of land records are some of the factors leading to land alienation. Safeguards like protective laws relating to land, debt relief, and money lending have been implemented and special attention has been paid to help the tribal by establishing an institutional network (Lakshmaiah, 1990). According to Sen (2011) the tribal of North Bengal are a socially and economically most backward, oppressed and most vulnerable community.

A Benchmark survey of integrated development projects in Kerala (1982) gives a detailed account of the inter community differences in the ownership of land. The disparities of land ownership are reflected in the magnitude of land possessed per household by the four communities, like Adiya, Paniya, Kurichyan and Kuruma. Establishment of plantations, and opening up of farming opportunities lead to the

settlement of the tribal population is desired and planned by the settlers. (State Planning Board, 1976).

Implication of land alienation per se is not limited to land alienation activities, as it has a wide ramification in education and health attainments of the tribes. It in a way gives rise to poverty and social exclusion (Rajasenan and Nikitha, 2013). Rajasenan and Abraham (2013) in their study pointed out that landholding pattern determined the livelihood options of the tribes. Absence of landholdings for farming adversely affected their traditional avocation of agricultural activities followed by lack of food and nutritional security. The problem of landlessness is greater among the Kattunaikans, i.e 25 per cent, followed by the Adiyans 10.7 per cent and Uralis community as 10.7 per cent as they do not own landholdings of 50 cents and above. In the case of Paniya community only 1.4 per cent of them have owned 50 cents and above of land. But the condition of Kurichyan community is different from that of others as a majority of them, i.e 44.3 per cent of the community, are blessed with landholdings above one acre.

Rajasenan and Nikitha (2013) in their study have mentioned the new scheme launched by the government in 2001 for the allocation of land to landless tribes. Transfer of 8943.34 acres of land to 6777 aggrieved families has been discussed in the study. But this issue has only partially been solved as 61 per cent of landless families are yet to receive the land as most of the tribes who have been allotted 'title deed' have no idea about the location of their land. From this it is clear that resettlement package of the government has not yet reached the level envisaged.

A study conducted by Rajasenan (2014) stated that Kerala Scheduled Tribes (Restriction on Transfer of Land and Restoration of Alienated Lands) Act was not successful in stopping land alienations that still prevail in the tribal area. In the study, the author explained the causes of land alienation and its results. The study pointed out that land alienation phenomenon started during the period of colonial rule in the form of Zamindari and Jagirdari system. Moreover development -oriented

deforestation adds fuel to fire. The tribes of Attapadi alone lost 144386 cents of land during 1960-80. Land alienation among tribals is the highest during 1972 and 1982. The study reported that 92 per cent of tribal households in Idukki district and 87 per cent in Mananthavadi of Wayanad district lost most of their land during the post reform period. From this, it is clear that tribal lands were encroached upon by non tribals in the name of land reforms.

2.1.5 Poverty related Studies on Tribes

A study conducted by Barry (1995) in the estimated poverty incidence at the district level shows that there are over 100 districts in India that have poverty incidence level higher than the national average. Of these, about 20 districts have poverty level of 50 per cent, or above the national average. Poverty profiles and estimates from micro-studies show that 62 per cent of tribal groups live below the poverty line (UNDP, 2005). The incidence of poverty among the tribes is the highest both in rural (44.2 per cent) and urban areas (37.5 per cent) as compared to other social groups. (Mohammad,A, 2007). Meenakshi and Viswanathan (2003) in their study draw attention to the sharp divergence between the expenditure and the calorie - based measures of poverty and point out that there is a need for a fresh debate on the determination of both the calorie norm and the poverty line.

Dandekar and Rath's (1971) ' On poverty measurement in India based on household budget data' was rooted in the concept of 'nutritional adequacy' that was defined as 2250 calories per capita per day. Chatterjee, Sankar, Paul (1963), and Bose (1990) used 2400 calories per capita per day as the minimum requirement. According to Food and Nutrition Board, Dept. of Food, Government of India (1982), the norm should be 2362 calories and 57.8 gms of protein per capita per day. In view of the recommendation made by Pattwardhan, 2100 calories and 55 gms of protein are the adequate diet of an average Indian adult in moderate activity.

According to Sukhatme (1965), it should be 2370 calories and 65.6 gms of protein. Sundaram and Tendulkar (2004) focusing on the poor in the labour force,

analyse the demographic characteristics of poor households that helped identify the demographic determinants of poverty. Rajuladevi (2000) examined the poverty profile of landless female labour households in wet and dry villages with reference to income, management and borrowings. Panda, (2003) provides a V shaped relationship between household economic status, especially poverty status and women's current employment status. There are over 100 districts in India that have poverty incidence level higher than the national average. Of these, about 20 districts have poverty level of 50 per cent, or above the national average. Over the past 20 years, the number of people in poverty rose by 50 per cent (Barry, 1995).

Sujith et al. (2014) in their study on poverty among Attappadi tribes used HDI and GDI to identify poor people. Three tribes namely, Irula, Mudugas and Kurumbas, are included in the study. And the analysis reveals that an average HDI of tribes in Attappadi is 0.370, i.e. in Attappadi more than 90 per cent of the tribal population live below the poverty line. Kurumba – a primitive tribal group in Kerala has experienced extreme poverty among three tribal groups.

Scaria et al. (2013) in their study assess the nature and intensity of poverty at the individual level, creating a clear picture of people living in poverty within and across the region by means of Multi-dimensional Poverty Index. The result shows that an average headcount ratio of tribes in Attappadi is 0.930 showing 93 per cent of tribe population lived in multi-dimensional poor status. Headcount ratio of Kurumba community (0.097) is the highest among three tribal groups. The intensity of deprivation experienced by people living below multi-dimensional poverty level in Attappadi is 53.4 per cent. Attappadi block analysis shows that an average MPI value of tribes in Attappadi is 0.496 and the highest proportion of MPI poor is among Kurumba community.

Oomen and Shyjan (2014) in their study use thirteen parameters for constructing deprivation index. STs with a deprivation index of 59.9% (based on DI5) and fisher folk with 43.4% are the worst among the social classes under study.

The lowest percentage of households with members above the age of 65 among the STs is indicative of their poor life expectancy and health hazards. Again as regards such critical parameters, like supply of electricity, the adivasis' deprivation index is as high as 50.7% , as against 15.2% for the poor as a whole.

Arden Finn et al. (2013) in their study of measurement of poverty in South Africa pointed out that poverty should include dimensions of well-being that cannot be measured in monetary terms. Data on health, education and standards of living can be used to calculate a so-called multi -dimensional poverty index (MPI). The results suggest that both the prevalence and the intensity of multidimensional poverty fell significantly from 1993 to 2010. The study concludes that the decline in multidimensional poverty is much greater than the decline in poverty as measured in terms of income and/or expenditure. Malhotra (2014) discussed poverty profile of India in terms of social groups. The study gives the inference that poverty incidence at the all India level is higher among schedule tribes than schedule caste in rural areas and vice versa in urban areas though in both cases it declines sharply.

Sharma (2004) in her study stated that the four southern states, viz., Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu have performed well in the reduction of poverty, whereas the performance is poor in some of the central (Uttar Pradesh, Madhya Pradesh) and eastern states (Bihar and Orissa). The study concludes that the performance of these states both in respect of poverty alleviation and socio-economic development needs to be decisively strengthened.

Sunitha (2014) in her study pointed out the extreme poverty and inequality of the tribes of Kerala with the help of human development indicators. From the study it is clear that severe inequality exists even in the tribal community itself in the area of income, expenditure and human development indicators. Study concluded that tribal population in Kerala is no longer unique with respect to human development indicators. Tribes like Malayarayan, Kurichyar and Kurumar are considered as forward tribes based on their better off human development indicators as their HDI

profile is 0.6 points .While the Muthuvan, Adiyar and Kattunaikyan etc have low HDI profile of 0.4 points.

GOK (2008) reported that 24.2 per cent of tribes fall the Below Poverty Line (BPL) whereas the corresponding State average is only 9.4 per cent. The incidence of poverty among the Scheduled Tribes in Kerala is only half the all India figure which suggests that the poverty alleviation measures implemented in the State have been more effective, compared to the rest of India (GOK, 2008). While examining the incidence of poverty at the state level, the situation is different as it reveals the vulnerability of the tribal community in the State. The poor among the scheduled tribes in Kerala constitute three per cent of the total BPL population in Kerala, while their total population in the State is only 1.14 per cent. With regard to the incidence of poverty among all sections, it is found that the incidence of poverty in ST population is about three times that of the general population.

2.1.6 Health and Nutritional status related Studies on the Tribes

Debbie and Krisela (2001) in their study reveal complex patterns of mortality, morbidity, risk factors and unhealthy lifestyles – an amalgam of a stratified society undergoing a health transition at a rapid pace. This study demonstrates the value of detailed analysis of large national data sets , such as mortality statistics and South Africa Demographic and Health Survey for surveillance and research in order to address the complex interactions of lifestyle, risk factors and related chronic diseases in a country with multiple burdens of disease.

Kankana De (2017) stated that majority of rural people have suffered from skin diseases, sexually transmitted infection and reproductive tract infections. Lack of knowledge and failure to take medicines adversely affected their health outcomes. Moreover early age marriage leads to low birth weight child or intrauterine growth retardation. Uses of sanitary latrine among them are so poor and they use open field for defecation which causes worm infestation and that leads to anaemia.

Arokiasamy and Soumitra (2009) explained the levels, differentials and patterns of morbidity prevalence in selected states in India and also examined the existing inequalities in non-fatal health outcomes between different subsections of Indian population. Suryanarayana (2008) in his paper stated that aggregate morbidity rates, combined across diseases are higher for the rich than for the poor in both rural and urban sectors in Kerala and India as a whole and the relative share of the rich in total morbidity is more at the India level than in Kerala.

The study conducted by Nimisha (2013) found that morbidity is negatively influenced by health expenditure and literacy level of the people suggesting the fact that morbidity is negatively related to these factors. Study concludes that diseases of affluence, like cancer, heart diseases, blood pressure, diabetics, etc have positive relationship with per capita income.

Krishnasami, P (2004) in his study pointed out that morbidity pattern of Kerala has undergone changes due to aging of its population. The study reported that acute morbidity is lower among males than females under the age group of 15-44 years. Navaneetham et al. (2009) in their study reported that Kerala seems to have entered the fourth stage of the epidemiological transition and lifestyle related diseases are on the rise in Kerala. The study concludes that females were at greater risk of morbidity than males. According to NFHS-3, forty seven per cent of India's children below three years of age are underweight, 39 per cent stunted and 19 per cent anaemic. More than 6,000 Indian children below five years die every day due to malnourishment and 30 per cent of the new born are significantly underweight. Anaemia affects 3.5 billion individuals in the developing world or well over two persons out of three. More than 320 million people in India suffer from iron deficiency anaemia with the highest prevalence among women and children.

Sunny and Navaneetham (2008) stated that about one-fourth of rural women suffer from both chronic energy deficiency and anaemia, which is 10 percentage points larger than the incidence in urban India and 78 per cent of women with both

chronic energy deficiency and anaemia live in rural India. Kapil and Singh (2002) in their study in an affluent school in Delhi found that the prevalence of overweight was 31 per cent, of which 7.5 per cent were frankly obese.

The important factors related to hospitals influencing health services utilisation are the illness level, average cost per visit, health insurance coverage and age (Wan and Soifer, 1974). Utilisation of health services depends on the availability of quality health care services at a reasonable distance and on the ability of the people to utilise health services effectively. Most of the child births take place at home mainly because of lack of access to institutionalised care, quick means to transport, inability to meet user charges and associated costs, the availability of cheap and more accessible alternative care providers, such as traditional birth attendants (TBAs) and the poor quality of services offered at the local health facilities(Ikamari, L ,2004). 38 per cent of the respondents had their deliveries in supervised services, 30 per cent at home and two per cent at prayer home. The traditional birth attendants (mid wives) were therefore the most utilised service for delivery (Okafor, 1991).

Neeraja (1992) in her study clearly pointed out that 36 per cent of respondents received antenatal services, of which only 19 per cent received these services from government agency and the remaining 17 per cent obtained it from private agency. Only 15 per cent were examined by health personnel for lab investigations, like urine, sugar and haemoglobin levels. Only nine per cent received health education regarding diet, child care and immunisation.

Being underweight had an inverse relationship with socio-economic position, (Subramanian and Smith,G, 2009). A positive correlation, however, was found between socio-economic position and being overweight and obese. Children are increasingly vulnerable to common communicable diseases, like measles, whooping cough, tuberculosis, tetanus, diphtheria and poliomyelitis, malnutrition and resultant deficiency diseases are major causes of permanent impairment (ICDS, 1984).

Night blindness, xerosis and bitot's spots were more common in grown up children above six years than pre-schoolers (Pingle, 1987). Vitamin A deficiency showed a progressive increase with age and signs of iron deficiency were most noticeable among all age groups (Gopaldas, 1987). The incidence of malnutrition was high among the children and infants. Pregnant and lactating mothers appeared to be undernourished. (Jacob,1990 and Prasanth, 1990). It was essential to educate the families on child feeding practices (Jayalakshmi and John, 2008) Mohindra et al. (2006) did a study on women health in a rural community in Kerala and examined the social patterning of women's self-reported health status in India.

Socio-economic and demographic variables have a significant influence on the odds of Chronic Energy Deficiency (CED) in women and malnutrition in children (Woldemariam Girma, 2002). Households' assets have a strong significant correlation with children's height and probability of stunting (Sahn and Stifel, 2003). Bose,K and Biswas,S (2007) in their study concluded that the rate of underweight and wasting was higher among girls and the frequency of stunting increased with increasing age in both sexes.

NNMB (2003) in their study in rural areas of India on haemoglobin status indicated that the overall prevalence of anaemia among the rural adolescent girls was about 70 per cent. The study of Gopalan (1987) revealed that in India, about 65 per cent of girls are identified to be at obstetric risk (by height and weight criteria) in their 15th year compared to 20 per cent in their 19th year. The mean age at first conception in six large north Indian states is reported to be 15.3 years. Rao (1982) points out that malnutrition is the deficiency arising from a nutritionally unsound composition of food. Vipin Chandran (2009) in his study on nutritional status of pre-school children in rural areas of Kasargod district reveals that rural pre-school children have great difficulty in coming out of 'under nutrition trap' when they enter stages of adolescence and adulthood. The socio-economic and environmental profile of pre-school children in Kasargod district along with their, household deprivation and nutritional status is highlighted in the study.

Gopalan (1997) in his study reveals that the hallmark of poor maternal nutrition and poor antenatal care in a community is the high proportion of babies born with low birth weight of less than 2.5kg. There exists a high prevalence of protein energy malnutrition in children under the age of five years especially among those belonging to scheduled tribes in India (Nayak, 1990). Symptoms of malnutrition, specially pellagra and night blindness, are often seen among tribal population (Basu, 1986). According to NIPPCD (1991) Protein Energy Malnutrition (PEM) is prevalent among tribal children of Manipur, Banaras and Baroda. Studies also revealed that PEM was the lowest in the first six months and highest in the later years as the age increases. The most common deficiencies observed among Lanjia Saora tribes of Orissa were protein energy malnutrition, deficiencies of vitamin A, vitamin B, vitamin B2, vitamin C and iron deficiency anaemia.

Kaur et al. (2013) in their epidemiological studies confirmed that sickle cell anaemia is rampant among the tribal population. The study recommended that genetic health services be integrated into existing primary health care and medical services to combat the epidemic. Venkata Naidu, K (2015) pointed out that communicable diseases, like tuberculosis, hepatitis, sexually transmitted diseases, malaria, filariasis, diarrhoea and dysentery, jaundice, parasitic infestation, viral and fungal infections, conjunctivitis, yaws, scabies, measles, leprosy, cough and cold, HIV/ AIDS, are prevalent among the tribes in India.

Oral disease burden is very high among the Paniya community. Lack of basic oral health care access and prevalence of tobacco habits are the main reasons for high oral disease burden in their population (Valsan, I et al., 2016). Health status of tribal population is not robust, as they are very much below the state average in terms of most of the health indicators of morbidity, mortality, infant mortality and other demographic features. This is because of their peculiar habits, like drinking water and use of tobacco (Kannan et al., 1991). Children with more than one anthropometric failure, i.e. those who have wasting and are underweight, those who have wasting and are stunted and underweight, and those who are stunted and

underweight, were more likely to have had diarrhoea than children with only a single failure. And the mothers whose children had multiple anthropometric failures were more likely to report that their children displayed symptoms of Acute Respiratory Infection. The primitive tribes have distinct health problems, mainly governed by multidimensional factors, like their habitat, difficult terrain, ecologically variable niches, illiteracy, poverty, isolation, superstition and deforestation (ICMR, 2003). The study also indicates that the tribal people suffer disproportionately from malaria, sexually transmitted diseases, tuberculosis, genetic disorder diseases like sickle cell anaemia as also nutritional deficiency diseases.

Basu, S (2000) discussed factors, like infant mortality, life expectancy, genetic disorders, sexually transmitted diseases, nutritional status, forest ecology, child health and health care practices, which are mainly responsible for determining the health status. Mishra, M (2012) explained the need to capacitate the traditional healers by linking them with modern health institutions. The Department of Science and Technology (1990) stated that the sickle cell disease was found in 72 districts of Central, Western and Southern India.

Ray and Roth (1991) observed that the marital age specific fertility rate was the highest (0.336%) among mothers in the 20-24 year age group, whereas it was the lowest (0.44%) among the 45-49 year age group. There were significant differences in death rates among the tribal population in different States. It was high in Maharashtra followed by Gujarat (Parasuraman and Rajan, 1990).

Gangadharan and Kumar (2015) in their study conclude that non availability of edible roots, green leafy vegetables, papaya, tapioca, bamboo, shoots, etc in their food pattern, low socio economic status to purchase food items from outside, consumption of food only once a day, seasonal employment, lack of education, lack of awareness about balanced food intake, early marriage and high morbidity due to unhygienic practices and surroundings are the major reasons for the poor nutritional status and anaemia among tribal women and children in Kerala.

Mohindra et al. (2012) in their study spoke about age and sex standardized prevalence of underweight ($BMI < 18.5 \text{ kg/m}^2$), anaemia, goitre, suspected tuberculosis and hypertension across forward castes, Other Backward Class and tribal population in Kerala. (Gopalan, 1971) on tribes of Assam, Orissa (Mahapatra and Das, 1990), Haque, 1990, Kar et al., 2002) and (Basu et al., 1989), reported that high incidence of goitre, angular stomatitis and vitamin-A deficiencies are the main causes of malnutrition.

Environment, nutrition and lifestyle are the three factors affecting the health status of tribal communities (Deodhar, 2008). Prevalence of dysentery, fever and scabies is high in tribal children, compared to non-tribal children and it may be due to better access of health care facilities rendered to the non-tribal people (Rajiv, H, 2008).

Dissemination of sustainable agricultural technology along with nutrition education needs to be given importance to uplift living conditions of the farm families in tribal area (Bindu, R and Nadana, 2007). Radhakrishna and Ravi (2004) analyse trends in malnutrition in India over the past two decades and show that improvements in nutritional status have not kept pace with the reduction in poverty and there existed a very high level of inequality among tribals in all factors determining nutritional status. The inherent potential is significantly associated with the various socio-economic factors and also with nutritional and health factors (Premkumari and Deepa, 2008). Dissemination of sustainable agricultural technology along with nutrition education needs deserves to be given importance to uplift the living conditions of the agricultural families in tribal areas, (Rekha, Bindu and Nadana, 2007).

In Andhra Pradesh among tribal pre-school children body weight was low, compared to preschool children of non-tribal families (Rao et al., 1987). Nutritional deficiencies, such as calcium, iron, vitamin A, and iodine, fungal infections were also common among the tribal adolescents (Mathew et al., 1988). Maternal malnutrition

has a lasting effect on the nutritional status of children (Osmani and Sen, 2003). Malnutrition is associated with a cluster of related factors that together constitute what may be termed as the poverty syndrome (Gopalan, 1992). Malnutrition deteriorates the life chances of children in synergy with infections, because malnutrition is not only a consequence of infections, but also renders the children vulnerable to causes of infections (Martorell, R, 1999). In Assam among Sonowal girls, 35.8 per cent were malnourished in late school period and only 8.11 per cent in adolescent age (Jaswant,S and Sarthak,S, 2007). Jenukuruba tribal children of Mysore district suffered from different grades of malnutrition in the form of wasting, stunting and under- weight (Prabhakar and Gangadhar, 2009).

A study conducted by Thalassery Malabar Cancer Centre with the support of NRHM (2013) reported that five out of six tribes have the symptoms of cancer in Attapadi. The study concluded that mouth cancer was the result of too much consumption of tobacco and panparag. Another study conducted by NRHM (2013) among the tribes in Malapuram district shows that 23 tribes in the district suffered from serious sickle cell anaemia disease. Another 125 diseased persons were recognized as carriers of these diseases in the district. This genetic disease was reported along with other maladies, like nutritional deficiency diseases, sexually transmitted diseases, diseases due to over alcoholic consumption. Sickle cell anaemia is a major threat of genocide to tribes in the district. The study concluded that out of 14000 tribes 8000 were included and sickle cell anaemia was reported among Paniya and Kattunaikyan tribes in the district.

Ekbal et al. in their study in Attapadi (2013) show that there was lack of nutritional status faced by pregnant women and feeding mothers in their area. Most of the women had undergone abortion twice or thrice. Premature delivery, low birth babies, etc. are leading to infant mortality in Attapadi. The weight of new born babies' ranges between 600-800gms only. This is lower than the required weight. Malnutrition and anaemic conditions of tribal mothers lead to birth of premature infants. Owing to recurrent abortion a lot of blood is discharged from her body.

Symptoms of diseases related to malnutrition, like marasmus and kwashiorkor, lack of breathing capacity, lack of proper caring, heart disorder, lack of prenatal care of mothers during pregnancy, TB and meningitis, non-availability of iron folic acids, higher blood pressure, lack of proper functioning of anganwadis, lack of sufficient supervisor in anganwadis, lack of transportation facilities to reach the innermost parts of tribal hamlets. Owing to non-availability of ragi a common food among tribals, they exchange matta rice for ragi which has low nutritional content. Lack of sufficient doctors and workers in hospitals adversely affected tribal health. There were 48 infant mortality cases reported up to July 2013 in Attapadi. The study conducted by UNICEF (2013) also pointed out that malnutrition and anaemia were major problems which were faced by tribal women and children in Attapadi.

The study done by WHO pointed out that 299 tribal children suffer from lack of nutrition and 29 infant mortality cases were reported in Attapadi during April 2012 to March 2013. Among these, 92 per cent of children had died before they reached six months of their birth. Of these infant mortality cases 55 per cent child deaths were reported within one month.

Human Rights Commission (2013) has made health check-up in 7565 households among 23597 tribes. Among these 496 aged citizens, 70 pregnant women, 283 children below 12 years were reported to be anaemic. The majority of tribes in Vellakulam colony were suffering from sickle cell anaemia disease. Children were born as low weight babies, tribes were also suffering from type one diabetes and deficiency of vitamin-A. The study concluded that long distance for receiving medical services, lack of proper co-ordination among the various departments would add fuel to fire. Infant mortality was reported in Aaralam of Kannur district (2013). Five cases of cancer, leprosy and TB were also reported from among tribals. Districts like Idukki, Kasargod, Malappuram, Wayanad and Pathanamthitta also reported malnutrition during the period.

Ajaykumar (2013) pointed out that 92 infant mortality cases were reported in Attapadi from 2007, but the government did not take any action against it at the beginning itself. The study concluded that out of 53 pregnant women, 90 per cent of them suffered from anaemia and government did not take proper action until it became severe issues. Rosario report (2013) shows that during 1996 death rate reported due to poverty in Attapadi was 25, whereas it increased to 32 during 1999. The report concluded that 15 IMR cases were reported due to lack of malnutrition during 2012.

The study conducted by Manikandan (2015) among tribes in Attapadi shows that continuous IMR in Attapadi leads to genocide, ethnocide or even culturocide of tribes. An important fact is that still infant mortality rates are reported among tribes in Kerala. Between 2017 -18 more than 10 cases were reported from the area. NFHS study published in the Malayala Manorama (2017) reported that 27 per cent of under five years old children including tribe community and non-tribe communities are severely malnourished. 27 per cent of under five years children do not have due weight for their age, 27.7 per cent of them have no height for their age. The study concludes that the majority of low weight children are from tribal communities residing in Thirunelli and Mananthavadi Panchayats.

2.1.7 Research Gap

From the above discussion, we infer that most of the studies not focusing on intercommunity variations exists among tribals especially poverty and health related issues. Therefore the present study is an attempt to analyse the variations in poverty and health status among tribals. The finding of the study is expected to fill the research gap.

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THEORETICAL FRAME WORK

Poverty is a universal phenomenon and is rampant in one form or another in almost all countries of the world (Rajan, 2009). Poverty like beauty lies in the eyes of the beholder. Hence, it is not easy to define poverty in precise terms. There were many attempts to define it and some defined it in terms of absolute sense while others in relative sense whereas, economists recently talked about a human concept of poverty (Rajan, 2009). However it is pervasive and severe in underdeveloped countries like India, where millions of people suffer from deficiency of food due to insufficient purchasing power. There are various concepts of poverty. They are absolute poverty, relative poverty, human poverty, poverty line, head count, head count ratio, poverty gap index, poverty gap ratio, income gap ratio, squared poverty gap index and Foster-Greer-Thorbecke measure. Another notable index of poverty was developed by Amartya Sen and his index is known as Sen Index of poverty.

3.1 Sen Index of Poverty

Sen has arrived at a poverty index by combining the two familiar poverty indices of head count ratio and income gap ratio with income inequality among the poor. His index is defined as the weighted average of the individual income short falls, where the weights depend on the rank order of the individual in the welfare ordering of the poor. Sen Index can be expressed as

$$S=H[I + (1 + I)Gp(\frac{q}{q+1})],$$

where H is the head count poverty ratio, I is the ratio of the average income shortfall to the poverty line (income gap of the poor), Gp is the Gini coefficient of income among the poor, and q is the number of people below the poverty line.

To capture the idea of Amartya Sen in his capability framework, poverty cannot be adequately measured with income, as income is imperfectly measured, and the United Nations Development Program used its Human Poverty Index from 1997 to 2009.

3.2 Human Poverty Index

The United Nations has constructed human poverty indices for developing countries. The HPI-1 uses the probability of not surviving up to the age of 40, the adult illiteracy rate, an average of the percentage of the population without clean water and the percentage of babies born underweight rather than traditional concept of poverty measure in terms of shortage of income. As far as poor people are concerned, they lack most of these essentials of life. People's well-being depends upon a plethora of factors that can be psychological, social, cultural, political and environmental. Any oversimplified measure can provide convenience but can't ever present the complete picture.

Poverty can be viewed as deprivation of consumption and opportunities and the former is known as Basic Need Approach and the latter is known as Capability Approach. The bundle of consumption should be assessed at the individual level in terms of what people want i.e. their need. Being an input i.e. consumption based approach, and it fails to connect poverty with people's values and aspirations and the end result is well-being. So the need for Capability Approach arises. The Capability Approach encourages not the welfare programs, but empowerment initiatives. It firmly believes that "after all people are responsible for their own lives" and should have the opportunities to do so. Prof. Amartya Sen has been the pioneer of the Capability Approach. He worked extensively on this approach during the 1980s and 1990s, which has stimulated considerable interest across the world. His theory

essentially consists of two indispensable elements: functioning (what people are capable of doing or being) and freedom.

So, developments mean creating an enabling atmosphere so that people can achieve valuable functioning and have the freedom to pursue what they value. The functioning is defined as “the various things a person may value doing or being.” It includes working, resting, being literate, being healthy, being part of a community, being respected, and so on. Not all persons will have the same functioning from the same commodities or facilities. Recognition of this individual diversity is an important feature of the Capability Approach. Another crucial element of the Capability Approach is freedom which brings in the capabilities. It refers to the ability to choose and prioritize different functionings – or freedom to choose the way of life. Thus the capabilities are “people's ability to do things taking everything into account, including external constraints as well as internal limitations.” Thus, the capabilities are closely related to the idea of opportunities.

3.3 Poverty Entitlement, Functioning, Being and Wellbeing

The term ‘Basic Capabilities’, used by Sen (1980), was intended to separate the ability to satisfy certain crucially important functioning up to certain minimally adequate levels. The identification of minimally acceptable levels of certain basic capabilities (below which people count as being scandalously ‘deprived’) can provide a possible approach to poverty. But the use of the Capability Approach is not confined to Basic Capabilities only. Theory explains that it is necessary to identify a minimal combination of Basic Capabilities and it helps in setting up the problem of diagnosing and measuring poverty and theory also argues against the inadequacy of income as the criterion of identifying the poor.

Turning to poverty analysis, identifying a minimal combination of Basic Capabilities can be a good way of diagnosing and measuring poverty. It can lead to results quite different from those obtained by concentrating on inadequacy of income as the criterion of identifying the poor. Sen (1983) Drèze and Sen (1989) and Hossain

(1990) .The conversion of income into Basic Capabilities may vary greatly between individuals and also between different societies, so that the ability to reach minimally acceptable levels of basic capabilities can go with varying levels of minimally adequate incomes. Theory says that the income-centred view of poverty, based on specifying an interpersonally invariant ‘poverty line’ income, may be very misleading in the identification and evaluation of poverty.

The other point of view is that poverty must, in some sense, be a matter of inadequacy of income, rather than a failure of capabilities. This adversely affected the argument of Capability Approach to poverty. In poverty studies related to less developed countries, the ‘poverty line’ income is derived explicitly with reference to nutritional norms. So the minimally adequate income level for reaching the same minimally acceptable capability levels will be accepted as variable—depending on personal and social characteristics in poverty analysis. So it is necessary to include the interpersonal and inter-social variations in the relation between incomes and capabilities. That is where the distinctive contribution of the Capability Approach to poverty analysis lies. Since the relationship between commodities and capabilities may vary greatly between individuals even in the same society and between different societies. For example, even for the elementary functioning of being well nourished, the relation between food intake and nutritional achievements varies greatly with metabolic rates , body size, gender, pregnancy, age, climatic conditions , epidemiological characteristics , and other factors on these and related matters (Drèze and Sen, 1989). The Capability Approach can accommodate the real issues underlying the concern for basic needs avoiding the pitfall of commodity fetishism.

Functionings represent parts of the state of a person—in particular the various things that he or she manages to do or be in leading a life. The capability of a person reflects the alternative combinations of functionings the person can achieve, and from which he or she can choose one collection. The approach is based on a view of living as a combination of various ‘doings and beings’, with the quality of life to be assessed in terms of the capability to achieve valuable functionings. Certain

functionings are considered as very elementary, such as being adequately nourished, being in good health, etc., and these may be strongly valued by all, for some reasons. But some are considered as more complex, yet widely valued, such as achieving self-respect or being socially integrated. Individuals may, however, differ a good deal from each other in the weights they attach to these different functionings—valuable though they may all be—and the assessment of individual and social advantages must be alive to these variations. Social analysis like dealing with extreme poverty in developing economies, we may be able to go a fairly long distance with a relatively small number of centrally important functionings and the corresponding basic capabilities e.g. the ability to be well nourished and well sheltered, the capability of escaping avoidable morbidity and premature mortality, and so forth. Choices have to be faced in the delineation of the relevant functionings.

The well-being achievement of a person can be seen as an evaluation of ‘wellness’ of the person's state of being. The exercise, then, is that of assessing the constituent elements of the person's being seen from the perspective of her own personal welfare. The different functionings of the person will make up these constituent elements. This does not imply that a person's well-being cannot be ‘other-regarding’. Rather, the effect of ‘other-regarding’ concerns over one's well-being have to operate through some feature of the person's own being. Doing good may make a person contented or fulfilled, and all these are functioning achievements of importance. In this approach, functionings are seen as central to the nature of well-being, even though the sources of well-being could easily be external to the person. The functionings relevant for well-being vary from such elementary ones as escaping morbidity and mortality, having mobility, etc., to complex ones, such as being happy, achieving self-respect, taking part in the life of the community, appearing in public without shame.

Thus Amartya Sen in his Capability Approach considered utility as satisfaction or happiness. Well-being of a person is considered a personal achievement i.e. how well his or her being is. Capability is a broad concept, and it

also includes the concerns that are associated with the 'standard of living', health, education and many other variables. Living standards relate specifically to the richness of the person's own life, whereas a person may value his or her capability also to be socially useful and influential. According to Amartya Sen, the poorer classes have a higher risk of diseases as well as higher probability of being excluded from the health services. It is regarded as a poor health status in society.

We can observe a strong relationship between income, education, health, and standard of living of an individual. It connects in both directions: (1) low income can be a major reason for illiteracy and ill health as well as hunger and malnutrition, and (2) conversely, better education and health help in earning of higher incomes. This higher income helps to improve the living standard of individuals in society. Sen considered unemployment as a serious impediment in acquiring minimum capabilities. Unemployment is not merely a deficiency of income that can be made up through transfers by the State. It is also a source of far reaching debilitating effects on individual freedom, initiative and skills. Among its manifold effects, unemployment contributes to the "social exclusion" of some groups, and it leads to losses of self-reliance, self-confidence and psychological and physical health.

Amartya Sen has pointed out that the concept of social exclusion has to take into cognizance the issues regarding poverty and deprivation. According to Sen, "poverty is the lack of capability to live a decent life as social beings and it has to be Centre staged in any strategy on social exclusion". Both 'Absolute Poverty' and 'Relative Poverty' which exclude people from basic amenities, such as housing, water, etc., also lead to ill-health and premature deaths. Especially women and children are affected by such deprivations.

Instead of traditional theories, Capability Approach by Sen considers the extent of freedom to achieve capabilities as each person is endowed with a set of capabilities which improve his or her overall well-being. Sen transformed the concept of 'entitlement' to capabilities, which is pointed out in his study of 'Famines

and Poverty'. Traditionally, it is believed that famines occur due to decline in food production and supply in the region. But his study on Bengal famine showed that famines occur not mainly because of fall in supply of food, but because of loss in 'entitlements' of the people and 'the purchasing power' to acquire and have access to food. The study highlighted the cause of hunger and deprivation as not only due to fall in food production, but also to distribution of food to the economic, social and political arrangements which can directly or indirectly influence people's capabilities or abilities to acquire food and to achieve health and nourishment (Alexander, 2008). Entitlements mentioned in the study are transformed to 'capabilities'. 'Entitlements' is used to depict lack of capabilities or abilities to meet necessities for basic survival. Capability set represents various alternative combinations of functionings from which the person can choose one combination (Sen, 1995). The choice of selecting valuable functionings and the opportunity to develop the capability through achievement of functionings require freedom. Thus capabilities stand for the extent of freedom that a person has, in order to achieve different functionings.

Capability Approach is different from that of utilitarian concept, as it does not consider how much an individual consumes or the utility accumulated to evaluate well-being. But this approach is based on the capabilities related to the possibilities and choices that we possess to achieve valuable 'human functionings'. Amartya Sen's stress on the point is that it is essential to expand intrapersonal and interpersonal freedom (individual agency and social arrangements). Unlike utilitarian concept, Capability Approach does not focus on how much an individual consumes or the utility accumulated to evaluate well-being; but this approach is based on the capabilities related to the possibilities and choices that we possess to achieve valuable 'human functionings'. Capability Approach does not look at well-being from the angle of how rich a person is. We can say that it is not the income which matters, but the capabilities or well-being of a person. It is the freedom of opportunities or choices made available. Sen integrates securing and expanding intrapersonal and interpersonal freedom (individual agency and social arrangements).

Freedom, in the opinion of Sen, depends upon social and economic arrangements, and political and civil rights. If there is any exclusion in a person's freedom to achieve the alternatives or choices on social arrangements, it restricts that person's set of capabilities.

It is argued that the Capability Approach can provide a framework that can reflect the many ways in which human lives can be blighted, and which offers some promise for poverty analysis. There are at least two reasons why it is timely to reconsider the potential of the Capability Approach. First, it has provided the conceptual underpinning for the UN's Human Development Reports (UNDP, 2010), which has influenced the understanding of well-being in the recent 'Sarkozy Commission' (Stiglitz et al., 2009) and has been the basis for the Equality and Human Rights Commission's approach to monitoring equality in the UK (Burchardt and Vizard, 2011). Second, there is, at present, an unresolved tension within poverty analysis between a desire to emphasise a broad measure of multidimensional poverty (Atkinson et al., 2002) and an insistence on conceptualising poverty in narrower terms around a core concept of resources (Nolan and Whelan, 1996). The Capability Approach offers a way to reconcile this tension between narrow and broad conceptions of poverty, by respecting the former without losing sight of the latter.

3.4 The Capability Approach and Poverty Analysis

The capability approach can provide a framework for poverty analysis that overcomes some of the central problems with existing traditions of analysis. The direct measurement of poverty has increasingly focussed on a narrow concept of material poverty. This emphasis on resources as being the core of the poverty concept has limited not only the constraints that are considered (solely a lack of resources) but has also limited the indicators themselves to marketable items. While social exclusion is often seen as complementing the concept of poverty, its lack of coherence renders it deeply problematic. It remains unclear whether social exclusion is an outcome or a process and about for whom it is bad. This incoherence in terms

of conceptualisation is mirrored in measurement, where indicators of disengagement are routinely interpreted as implying exclusion. Finally, the concept of deprivation, at least in its less popular but broader incarnation, can be seen to bear important similarities with the concept of capability deprivation. However, the importance of constraints to the concept of deprivation again lacks clarity, and, to be useful, the concept requires greater coherence.

There are six important insights for poverty analysis (Hicks,R, 2012). First, the capability approach questions whether we can be neutral between direct and indirect approaches to poverty analysis. In emphasising the intrinsic importance of people's capabilities over the merely instrumental importance of their resources, the approach focuses on those who have impoverished lives, and not just depleted wallets (Sen, 2000).

Second, the concepts employed are not just those of poverty and they should reflect deprivations that are enforced and not voluntary non-participation. While on the surface this may seem self-evident, they would rule inadmissible many of the indicators used to measure social exclusion and would provide greater clarity to the concept of multiple deprivations.

Third, a lack of resources cannot be the only constraint of interest for poverty analysis. If we believe that the indicators we employ hold normative weight, then it is nonsense to suggest that their absence is of serious concern because of a lack of resources. But of no concern if they happen as a result of other constraints (e.g. disability or discrimination). There is a normative distinction between choice and constraint (Le Grand, 1991) in a way that there is not between one type of constraint and another.

Fourth, the Capability Approach emphasises the multidimensional nature of poverty analysis, with a broader view than focussing solely on 'material' poverty. There is, at present, a tension between a desire to reflect the multidimensionality of poverty (Atkinson et al., 2002) and an insistence on preserving the relationship

between resources and the concept of poverty (Nolan and Whelan, 1996). A broader focus is required because some of the most vulnerable members of society experience circumstances that may not immediately be due to a lack of resources: homeless people, drug and alcohol addicts, functional illiterates and those who have suffered physical or mental abuse (Volkert, 2006), for example. It is sometimes suggested, however, that a resource-based approach can act as a proxy for multidimensional deprivation since resources are an all-purpose means (Rawls, 1971). But, as we have noted, research examining the relationship between indirect and direct measures of poverty has consistently emphasised that they identify different people as being in poverty (Bradshaw and Finch, 2003).

Fifth, the Capability Approach offers a way to reconcile the tension between narrow and broad approaches to poverty by respecting the former, while not losing sight of the latter. Lister (2004) has argued that to conceive of poverty as capability-failure is to conflate poverty with an altogether broader notion, such as quality of life or wellbeing, because not all 'ill-being' is related to a lack of resources. The 'normative focus' of the Capability Approach seeks to identify the 'informational space' of analysis and is more concerned with delimiting this normative terrain than with deciding whether and/or how this terrain may be subdivided into constituent concepts. Thus, 'poverty' could retain its narrower meaning, with a lack of resources at its core, if the essential additional terrain stressed by the Capability Approach were taken up by the concept of multiple deprivation.

Sixth, a capability framework for poverty analysis would draw both on Capability Approach and existing poverty analysis within Social Policy. The contribution of the Capability Approach is its normative focus – in prioritising capabilities (ends) over resources (means), in adopting a multidimensional perspective and taking a broad view of the constraints that restrict human lives. But the specific dimensionality of such a capability framework would be decided contextually with reference, *inter alia*, to the existing literature on poverty analysis within Social Policy.

3.5 Sen's Four "Limitations" of the Entitlement Approach

In *Poverty and Famines*, Sen recognized four "limitations" of the entitlement approach, each of which he mentions with a little elaboration:

- There can be ambiguities in the specification of entitlements" (Sen, 1981)
- While entitlement relations concentrate on rights within the given legal structure in that society, some transfers involve violations of these rights, such as looting or brigandage (Sen, 1981).
- People's actual food consumption may fall below their entitlements for a variety of other reasons, such as ignorance, their fixed food habits, or apathy" (Sen, 1981)
- Finally, the entitlement approach focuses on starvation which has to be distinguished from famine mortality, since many of the famine deaths in some cases most of whom are caused by epidemics (Sen, 1981).

Sen's approach is significantly weakened, both conceptually and empirically, by its methodological individualism and by its privileging of economic aspects of famine above socio-political determinants. All these reasons together lead to the need for Multidimensional Poverty Index in poverty analysis.

3.6 Multidimensional Poverty Index

In 2010, the UNDP replaced the Human Poverty Index with its new Multidimensional Poverty Index. Multi-dimensional Poverty Index is calculated through the formula developed by OPHI for UNDP's in 2011. The MPI complements traditional income based poverty indices by measuring the multiple deprivations that households face at the same time (Rippin,N, 2011). MPI combines two key pieces of information: (1) the proportion or incidence of people (within a given population) who experience multiple deprivations and (2) the intensity of their deprivation: the average proportion of (weighted) deprivations they

experience. Formally, the first component is called the Multi-dimensional headcount ratio.

$$H = q/n$$

Here q is the number of people who are multi dimensionally poor and n is the total population.

The second component is called the intensity(or breadth) of poverty (A). It is the average deprivation score of the multi dimensionally poor people and can be expressed as:

$$A = \sum_{i=1}^n ci(k)/q$$

Where $C_i(k)$ is the censored deprivation score of individual i and q is the number of people who are multi dimensionally poor. The MPI is the product of both: $MPI = H \times A$. The index uses the three dimensions, namely health, education and standard of living. These are measured using ten indicators. It is represented in the table 3.1

Table 3.1
Dimensions and Indicators of Multi-dimensional Poverty Index

SI No	Dimension	Indicators
1	Health (1/6 weight is given)	Child mortality Nutrition
2	Education (1/6 weight is given)	Years of School Children enrolled
3	Standard of Living (1/18 weight is given)	Cooking fuel Toilet Water facility Electricity Floor Assets

Source: UNDP,(2011)

Each dimension and each indicator within a dimension is equally weighted. In the case of health deprived, if any child has died in the family, if any adult or child for whom there is nutritional information is malnourished. In the case of education deprived, if no household member has completed five years of schooling, at least one school aged child not enrolled in school. In the Standard of Living deprived, if the household has no electricity, if the household's sanitation facility is not improved or it is improved but shared with other households. If the household does not have access to safe drinking water or safe drinking water is more than a 30-minute walk from home round trip. If the household has a mud, sand or dung floor, if the household cooks with dung, wood or charcoal. If the household does not own more than one radio, TV, telephone, bicycle, motorbike or refrigerator and does not own a car or tractor.

A person is considered poor if he is deprived in at least 33.33 % of the weighted indicators. The intensity of poverty denotes the proportion of indicators in which they are deprived."0%" indicates no deprivation in that indicator, while "100%" indicates deprivation in that indicator.

3.6.1 Superiority of MPI compared to Capability Approach

Capability Approach was developed by Sen (1985, 1992, 1999), as a conceptual foundation. Dimensions are understood as functionings, which in turn, constitute human well-being. Because of this inherently multidimensional concept of well-being, the Capability Approach offers a comprehensive and coherent account of deprivations. Moreover, for the inevitable value judgments, the Capability Approach requires any application to draw on a relevant public debate (e.g., Sen, 1999). But MPI uses the dual cut off counting approach suggested by Alkire and Foster (2011). Alkire and Foster fulfil several desirable axioms that allow a sensible analysis. Moreover, the Alkire Foster Method is sensitive to changes in both the breadth and the incidence of poverty.

In the Capability Approach human well-being is inherently multidimensional and it assigns intrinsic importance to functionings, i.e. the doings and beings individuals have reason to value. This intrinsic importance gives thrust for instrumental importance as well, as being able to read and write or being healthy illustrates. Poverty is a capability deprivation, implying both a shortfall in one or several of the functionings. Consequently, indicators of deprivation both (i) need to be located in the functioning space and (ii) need to take account of the functioning's infeasibility. Capability Approach requires value judgments to be exposed rather than concealed, and in addition, they must be subjected to public debate. Only with clear presentation of the normative problem can a public debate about these issues be expected to fulfil its constructive role (Sen, 1999). In Capability Approach value judgments are needed for (i) the selection of functionings included in the index, (ii) the respective deprivation cut offs, (iii) the assigned weights, and (iv) the poverty cut off. So must be included a first set of indicators which aim at measuring important functionings. Specifically, so-called core indicators are to be regularly reported, and their selection is based on scientific advice (Arndt and Volkert, 2007). This selection is subjected to criticism and modification. Subjecting the choice of the deprivation cut off to public debate, however, further constrains the choice of a functioning's indicators. Specifically, indicators should allow for deprivation cut offs that are similar and meaningful across individuals, such that a public debate can study the pros and cons and eventually agree upon those cut offs. Sometimes limitations of available data prompt us to draw on imperfect indicators as well. In some cases a functioning may be only captured incompletely; in others, measurement remains within the resources space. The Capability Approach assigns goods, income, and other resources an instrumental role only, howsoever important they may be. It is in this concept the need for Multidimensional poverty index arises.

3.6.2 Importance of Multidimensional Poverty Index in the Study

The MPI can be used as an analytical tool to identify Multi-dimensional poor people, showing aspects in which they are deprived and help to reveal the interconnections among deprivations. It can also identify the poorest among the poor, reveal poverty patterns within districts or tribes and track changes over time. It can be used to create a comprehensive picture of people living in poverty and permits comparisons across countries and regions and the world, and within the countries by ethnic group, urban/rural location as well as other key household and community characteristics. The global MPI is implemented on measure of the Alkire and Foster methodology to present the first global measure of kind. It offers a valuable complement to the traditional income based poverty measures such as \$1.90 /day.

3.6.3 Methodological weakness of MPI

The calculation of MPI is based on ten vital items that are weighted differently according to their importance. MPI is a counting index as it simply counts the number of weighted items that household's lack. All households for which this number is at least 33 % are considered poor. All the other households are considered non- poor and therefore excluded from the calculations. Rippin,N(2011) pointed out four main methodological weakness related to MPI.

- MPI simply counts number of items lacked by households, it assumes that no correlation exists between them. Rippin,N(2011) pointed out that this assumption is not realistic. For example, proper sanitation and safe drinking water are related to health and education indicators.
- MPI is unable to capture inequality. That is transferring items from poor to a less poor household does not change the poverty index as long as both households remain poor according to the MPI.

- The cut –off level 33 % is arbitrary choice; changing it would affect poverty rates and even country rankings.
- The specific structure of MPI implies problematic distortions. It leads to an inflation in poverty rates that increases the poorer a country and thus the severe its budget constraints. This result in less attention paid to the neediest of the needy

3.6.4 Oxford Poverty and Human Development Initiative pointed out some Limitations of the MPI

The indicators include both outputs such as years of schooling and inputs, such as cooking fuel and one stock indicator -child mortality- which could reflect a death that was five years ago, because flow data are not available for all dimensions.

- Health data are relatively weak and overlook some groups' deprivations especially for nutrition, though the patterns that emerge are plausible and familiar.
- In some cases careful judgements are needed to address missing data. But to be considered multi-dimensionally poor, households must be deprived in at least six standard of living indicators or in three standard of living indicators and one health or education indicator. This requirement makes the MPI less sensitive to minor inaccuracies.
- Intra household inequalities may be severe, but these could not be reflected.

While MPI goes well beyond a head count to include the intensity of poverty experienced, it does not measure inequality among the poor. Rather, OPHI report a separate statistic showing individual and group – based inequalities. Poverty has many adverse effects on the individual and society and one among them is poor health. Health is the prime concern of an individual. WHO (1988) defined health is a

state of complete, physical, mental and social wellbeing of a person and not mere absence of diseases.

3.7 Poverty and Health Status

Phipps (2003) in his study “impact of poverty on health” attempt to establish that poverty causes poor health. For this purpose he classified the entire study into individual or micro level and population or macro level. One of his major findings is that there is a very clear and robust relationship between individual income and individual health. i.e. poverty leads to lower health status. Macro level or population level study shows that societies with more inequality have worse health outcome and he explained it with the help of absolute income hypothesis, relative position or psycho social hypothesis and neo-materialist hypothesis. Absolute income hypothesis suggests that health status increases with the level of personal income but at a decreasing rate. Relative position hypothesis emphasizes individual position within a social hierarchy independent of standard of living, as the key to understanding the link between socio-economic inequality and health. The neo-materialist hypothesis argues that high levels of income inequality are simply one manifestation of underlying historical, cultural, political and economic processes that simultaneously generate inequalities, for example, in social infrastructure (e.g. medical, transportation, educational, housing, parks and recreational systems). From this perspective, inequalities in health derive from inequalities in all of the above aspects of the material environment.

A study conducted by ICMR (2003) pointed out that widespread poverty, illiteracy, malnutrition, absence of safe drinking water and sanitary conditions, poor maternal and child health services, ineffective coverage of national health and nutrition services are the major factors creating poor health condition among the primitive tribal communities in the country. Tribe communities are affected by various social, economic and developmental constraints that potentially expose them to high rates of malnutrition and health problems which are correlated with the

lowest percentage of higher education of the community (Deka, 2011). High burdens of diseases of the poor communities, namely malnutrition and infectious diseases, are prevalent among the tribal communities, especially chronic under nutrition have been observed among child and adult populations (Bose et al., 2006). Frame work used in the present study helps us to explain how poverty and health status influence each other.

The poor suffer worse health and die younger. They have higher than average child and maternal mortality, higher levels of disease, more limited access to health care and social protection, and gender inequality disadvantages further the health of poor women and girls. For poor people especially, health is also a crucially important economic asset. Their livelihoods depend on it. When a poor or socially vulnerable person becomes ill or injured, the entire household can become trapped in a downward spiral of lost income and high health care costs. The cascading effects may include diverting time from generating an income or from schooling to care for the sick; they may also force the sale of assets required for livelihoods. Poor people are more vulnerable to this downward spiral as they are more prone to disease and have more limited access to health care and social insurance (WHO, OECD, 2003). These conditions are true, especially in the case of tribal communities.

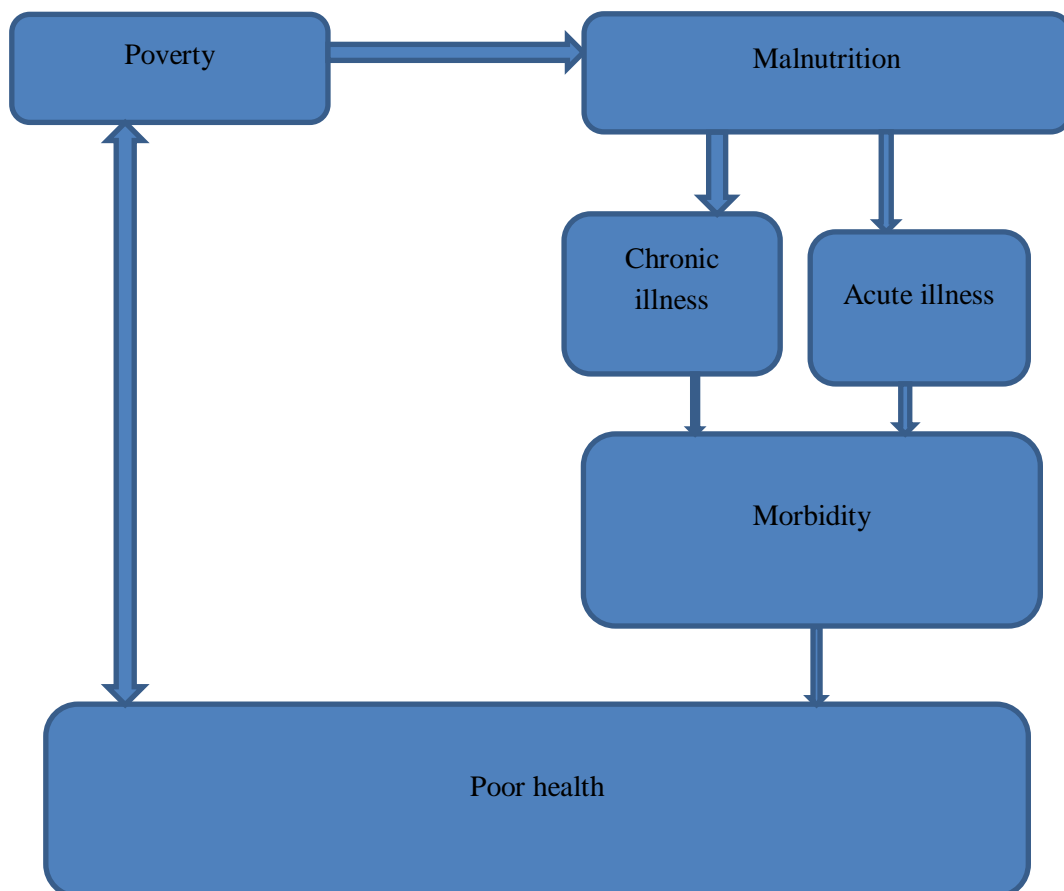
Gangadharan (2005) in his study mentioned that low income families are more disease prone and have considerable need for medical attention due to their typical living environment. Poverty becomes the root cause of malnutrition, diseases and death. Moreover, the burden of disease falls unevenly on different sections of population. The poor social classes are more prone to a variety of behavioural patterns that are not conducive to promoting health. These include greater prevalence of smoking and drinking (Smith et al., 1990).

A study done by Kutty et al. (1993) revealed that the socio economic status was found to have a definite influence on birth and death rates with higher socio economic status resulting in lower birth and death rates. The study also revealed that

higher risk of mortality among the poor households could be partly being explained by material deprivation and higher birth rates could be the result of poorer educational attainments. The study explained this with the help poverty hypothesis and behavioural hypothesis. As poverty hypothesis says that poor health outcomes are a result of poor living conditions. People with inadequate income have less to eat do not live in properly constructed houses and may drink contaminated or polluted water. Owing to their poverty, they also lack access to medical interventions when needed. Behaviour hypothesis pointed out that poor people also have a propensity to indulge more in behaviour patterns which are not conducive to good health such as alcoholism, over indulge in smoking , use of narcotic drugs ,etc.

3.8 Poverty and Health Framework

Fig 3.1
Poverty and Health Framework



Poverty of tribal communities affected the health status as they are caught in the vicious circle of poverty, morbidity and malnutrition. The burden of communicable diseases, particularly those associated with a poor environment or maternal, perinatal and nutritional problems. They are also included under the category of acute illness like acute respiratory infection, diarrhoea, malaria and measles which are responsible for most childhood mortality and morbidity. And non-communicable diseases which are also included under the category of chronic illnesses like diabetes, cardiovascular disease, respiratory problems caused by air pollution, psychosocial problems and injuries from road-traffic crashes and interpersonal violence— also have a marked impact on the health of poor populations, especially among the tribal communities in Kerala.

Poor maternal health, sexually transmitted diseases and limited access to family planning services put a sizeable burden of ill health upon poor women among the tribal communities. Tobacco use has a profound effect on poverty and malnutrition in low-income countries, when poor families purchase addictive tobacco rather than food. There are grave poverty implications of the high prevalence of tobacco use among men with low education and low incomes, which raises substantially the risks they run of serious diseases and premature death (WHO, OECD, 2003). These situations are prevalent among the tribal communities as tobacco and alcohol consumption is reported among the tribal communities in Kerala.

Malnutrition and food insecurity, obviously, have strong implications for health. Nearly 800 million people in developing countries are chronically hungry. Many live in conflict areas and more than 60% of them are women (WHO, OECD, 2003). Hunger and malnutrition increase vulnerability to disease and premature death, and reduce people's ability to earn a livelihood, not least through cultivation and generating an income. It acts as both a major cause and effect, and a key indicator, of poverty and lack of development. Failure to treat the underlying causes of malnutrition and their consequences undermines the impact of other efforts to

improve health, while ill health itself reduces the ability of the body to absorb nutrients from food. Malnutrition affects one in three people worldwide, especially the poor and vulnerable. Sixty per cent of annual deaths among children under five are associated with being underweight, while 161 million children are stunted in their linear growth. Iodine deficiency is the biggest single preventable cause of brain damage and mental retardation. Iron deficiency anaemia is second among leading causes of disability and may be a contributing factor in 20% of all maternal deaths. Vitamin A deficiency causes irreversible blindness and deaths among millions of children every year (WHO, OECD, 2003). It is evident that food insecurity, malnutrition and its adverse effects like vulnerability to disease, premature death, inability to absorb nutrients from food, underweight, under five mortality of children, iodine deficiency, mental retardation, etc. are reported among the tribal communities in Kerala. A study conducted by World Cancer Research Fund International (2014) pointed out that our food consumption and nutritional status can affect cardiovascular diseases, some types of cancer and diabetes. Food, diet and nutritional status including overweight and obesity are also associated with elevated blood pressure and blood cholesterol and resistance to the action of insulin. These conditions are risk factors for non-communicable diseases, but major causes of illness themselves.

Inadequate water quality leads to the transmission of diseases such as diarrhoea, cholera, trachoma, and onchocercosis. Scabies and trachoma depend on the quantity of water available while stagnant water is a breeding ground for the vectors transmitting malaria and schistosomosis. Access to adequate quantities of water is also essential for food production, which in turn, improves nutrition, health and people's ability to withstand and recover from diseases. Lack of sanitation increases the transmission of excreta-generated illnesses, including certain faecal-oral diseases, such as cholera, soil transmitted helminths (among them roundworms and hookworms), and water-based helminths (which cause, for example, schistosomosis). The majority of people affected by these diseases are poor. Most of the resulting deaths are among children under five and are concentrated in the

poorest households and communities. According to one estimate, at any one time, half of the urban population are suffering from one or more of the diseases associated with the provision of water and sanitation. Women are disproportionately affected, as they spend many hours daily collecting and carrying water over long distances in rural areas, whereas in urban areas women wait in queues for water from wells and standpipes. The carrying of water leads to chronic back pain, frequent miscarriages and uterine prolapse. Caring for sick family members and handling soiled clothes are particularly hazardous when water supplies are limited and sanitation insufficient, and women's responsibility for the disposal of waste exposes them to disease. The provision of sanitation is important for women not only for their physical health but also for their safety and dignity. In many cultures, women and girls can defecate only outside and after dark, which causes physical discomfort, serious illness and exposes them to the risk of sexual abuse (WHO, OECD 2003). From this, it is evident that poverty and health status are related to each other and the poor health status leads to poverty among the individuals.

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TRIBAL ECONOMY: AN OVERVIEW

4.1 Introduction

In India according to the 2011 census, tribal population accounts for 8.6 per cent of the total population, i.e. 104,281,034. Most of the tribes are concentrated in central parts of India comprising Madhya Pradesh, Maharashtra, Odisha, Gujarat, Chhattisgarh and Jharkhand. Trends in tribal population to the total population pointed out that Year 1961 and 1971 witnessed 6.9 per cent of ST population to the general population and it increased to 7.8 per cent, 8.1 per cent, 8.2 per cent and 8.6 per cent through the corresponding census period (Ministry of tribal affairs, 2013). Literacy rates of India show that there arose a literacy gap from 1971 to 2011 between scheduled tribe populations to the total population as 18.15 per cent in 1971, gap increases to 19.88 per cent in 1981, 22.61 per cent in 1991 and gap declined to 17.7 per cent in 2001 and 14 per cent during 2011.

Employment status of India is classified as rural employment and urban employment. Rural agriculture includes 370 tribal households per 1000 and the same is reported as only 319 among all social groups. Non-agriculture among the rural tribal households is 70 and all other social group together includes 155. Agriculture labourers in the rural labour force of STs are reported as 334 and the same is reported as 256 among the entire social groups in India.

Urban employment as reported among STs is 233 per 1000 households of self-employed, 384 among regular wage or salaried and 211 among casual labour and 169 among others. Whereas it is reported as 347 and 397 among self-employed and regular waged salaried of all social groups together. The average number of households which worked during the last 365 days in MGNREG works is 42 among STs and 37 households among all social groups together in India (NSS 66th round, 2009-10). Unemployed educated can be seen in both rural sector and urban sectors of India. It is reported as 136 graduates and 52 postgraduates per 1000 rural households among STs, compared to 86 and 80 among all other social groups together in India. Unemployment among the urban households sector of tribes includes 91 per 1000 among graduates and 86 per 1000 among postgraduates and above compared to 58 and 61 of all other social groups together in India (NSS 66th round, 2009-10).

Poverty estimate of Planning Commission shows that poverty reported from among the scheduled tribes in each successive year is higher than that of scheduled castes and other communities. Rural poverty among tribes in India is higher than that of urban and rural poverty reported during the year 1983-84 was 63.8, whereas urban poverty during the period was 54.2. During 1993-94 and 1999-2000 rural poverty declined to 52.2 and 45.9 respectively. It increased to 61.9 during the period of 2004-05 in rural sector and 35 in urban sector respectively (GOI Planning Commission). The Planning Commission report 2004-05 shows that Orissa has the highest rural and urban poverty among the tribes having 75.6 and 61.8 per cent respectively. Percentage of schedule tribe population below the poverty line during the year 2009-10 shows that poverty among scheduled tribe of rural areas is higher than that of urban area, i.e. 47.3 and 30.4 respectively. (Tendulkar Methodology, 2009-10). In rural STs poverty is estimated to be the highest in Chhattisgarh and Orissa as 66.8 per cent and 66 per cent respectively and the lowest is reported in Jammu and Kashmir (Planning Commission, 2009-10). At the same time, urban STs

poverty is reported to be the highest in Jharkhand as 49.5 per cent and the lowest in Kerala as 5 per cent.

Infant mortality reported among scheduled tribe population in India is 62.1 per cent, child mortality rate 35.8 per cent, under five mortality is 95.7 per cent, childhood vaccination is 31.3 per cent, prevalence of anaemia among tribal women is 68.5 per cent. Women with nutritional deficiency is 46.6 per cent, infant mortality reported among all social groups together in India is 57 per cent with 18.4 per cent of child mortality and 74.3 per cent of under-five mortality. 43.5 per cent among all social groups children in India have received full immunization, 55.3 per cent women have anaemia. Nutritional deficiency among women reported from among the SC is 41.1 per cent and among OBC 35.7 per cent. Maternal mortality rate is reported to be the highest in Uttar Pradesh and Uttarakhand as 40 per cent respectively and lowest in Kerala having 4.1 per cent. All these clearly pointed out poor conditions of tribes, compared to all social groups in respect of education, employment, health and basic amenities leading to their poverty in India.

4.2 A Brief History of Tribes in Kerala

Tribes are the original inhabitants of a region or locality, leading an isolated life having very minimal contact with the rest of the population. Tribes in Kerala were primarily engaged in the occupation of agriculture or allied activities. The total Scheduled Tribe (ST) population of Kerala is 4, 84,839 spread across 36 different communities of the State (Census of India, 2011). Over 60 per cent of the total tribal population in the State are located in Wayanad, Idukki, Palakkad and Kasaragod districts. The Scheduled Tribes are overwhelmingly rural as 89.3 per cent of them reside in villages. Since a majority of them reside in remote areas and difficult terrains, they remain isolated from the mainstream population. These could be cited as the major reasons for their backwardness.

Table 4.1
Comparison of Population Density and Sex Ratio of Kerala with Wayanad, Idukki and Palakkad Districts.

Kerala			Districts		
			Wayanad	Idukki	Palakkad
Density of Population (Persons per sq Km)		860	384	255	627
Sex Ratio	Rural	1,078	1,034	1,005	1,068
(No: of females per 1000 males)	Urban	1,091	1,051	1,036	1,063
	Total	1,084	1,035	1,006	1,067

Source: Census, (2011)

Density of population (persons per sq.km) in Kerala is 860 sq.km and it is reported the highest in Thiruvananthapuram (1509 per sq.km) and the lowest in Idukki . Among the three districts it is reported 627 sq.km in Palakkad, 384 sq.km in Wayanad, 255 sq.km in Idukki district. Sex ratio in Kerala is reported as 1084 females for 1000 males, rural sex ratio reported as 1,078 and urban sex ratio reported as 1091. Sex ratio is reported to be the highest in Kannur district as 1133 and the lowest in Idukki district. Among the three districts in Kerala except Palakkad urban sex ratio is greater than rural sex ratio and it is reported the highest in Palakkad, followed by Wayanad and Idukki and it is 1,067, 1, 035, and 1,006 respectively. In Palakkad district rural sex ratio is slightly greater than urban sex ratio and in rural areas it is reported as 1,068 and 1,063 respectively. In Wayanad the urban sex ratio is greater than rural 1,051 and 1,034 respectively. In Idukki also the urban sex ratio outnumbered the rural and it is reported as 1,036 and 1,005 respectively. Sex ratio of ST population in Kerala is 1035. According to KILA's survey report 2008 the sex ratio reported among ST population in Wayanad is 1000:1028, in Idukki it is 1000: 999 in Palakkad it is 1000: 1013. Sex ratio reported among the SC population in Kerala is 1057 (census, 2011). We can notice a decline in sex ratio among the ST and SC population to the general population in Kerala.

Table 4.2
Population and Sex Ratios of Major Tribes in Kerala

Sl. No.	Communities	Population % (2001)	Sex Ratio (2001)	Child Sex Ratio (2001)	Sex Ratio (2008-10)
	Tribes		1021	974	
1	Paniya	22.4	1048	971	1057
2	Kurichyan	8.9	987	956	981
3	Malayararayan	8.8	1031	953	998
4	Irular	6.5	993	960	1015
5	Muthuvan	5.8	975	943	979
6	Kattunaikyan	4	981	1,024	1009
7	Adiya	2.9	1084	1,037	1082

Source: Census, 2001 & Schedule tribe Department 2008-10 Survey Report

Among the seven major tribes mentioned in the table 4.2 Paniyan tribe shows the highest population among tribal communities at 22.4 per cent. Their sex ratio was reported during 2001 as 1048 and it has increased to 1057 during the period 2008 - 10. And the lowest is reported by Adiyar community as 2.9 per cent and their sex ratio is reported as 1084 and it has declined to 1082 during 2008-10.

Table 4.3

Comparisons of Demographic Features of Kerala with Wayanad, Idukki and Palakkad Districts

Kerala				Districts					
				Wayanad		Idukki		Palakkad	
Number of Households	Normal	7,835,517		190,263		278,886		636,211	
	Institutional	12,478		483		730		597	
	Houseless	5,759		148		196		412	
Population	Males	16,027,412		401,684		552,808		1,359,478	
	Females	17,378,649		415,736		556,166		1,450,456	
	Persons	33,406,061		817,420		1,108,974		2,809,934	
Rural	Males	8,408,054		386,283		527,245		1,031,466	
	Females	9,063,081		399,557		529,684		1,101,658	
	Persons	17,471,135		785,840		1,056,929		2,133,124	
Urban	Males	7,619,358		15,401		25,563		328,012	
	Females	8,315,568		16,179		26,482		348,798	
	Persons	15,934,926		31,580		52,045		676,810	
Percentage Urban Population		47.7%		3.86%		4.69%		24.09%	
Kerala				Wayanad		Idukki		Palakkad	
		Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Scheduled Tribes	Males	238,203	1.42	74,476	18.54	27,995	5.06	24,314	1.79
	Females	246,636	1.49	76,967	18.51	27,820	5.00	24,658	1.70
	Persons	484,839	1.45	151,443	18.53	55,815	5.03	48,972	1.74
Scheduled Castes	Males	1,477,808	9.22	16,406	4.08	72,399	13.10	197,451	14.52
	Females	1,561,765	8.99	16,172	3.89	73,087	13.14	206,382	14.23
	Persons	3,039,573	9.1	32,578	3.99	145,486	13.12	403,833	14.37
Decadal Population Growth 2001-2011	Males	558,798	3.61	10,411	2.66	13,874	-2.45	92,493	7.30
	Females	1,005,889	6.14	26,390	6.78	(6,373)	-1.13	99,959	7.40
	Persons	1,564,687	4.91	36,801	4.71	(20,247)	-1.79	192,452	7.35

Source: Census, (2011)

Table 4.3 explains the comparative study of the demographic features of Kerala with respect to three selected districts. There are 7,835,517 normal households, 12,478 institutional households and 5,759 houseless are reported in Kerala. Number of normal households reported highest in Palakkad followed by Idukki and Wayanad it is reported as 636,211, 278,886, and 190,263 respectively. Houseless is reported highest in Palakkad followed by Idukki and Wayanad and it is 412, 196 and 148 respectively.

In Kerala, population is reported highest in Malappuram as 12.31 per cent of the State's total population and lowest in Wayanad as 2.45 per cent. Malappuram also recorded the highest growth in population at 13.39 per cent during the decade 2001-2011. Among the three selected districts population is reported highest in Palakkad followed by Idukki and Wayanad, 2,809,934, 1,108,974, 817,420 respectively. Total rural population in Kerala is 17,471,135 and rural males are 8,408,054 and females are 9,063,081. Rural population is reported highest in Palakkad followed by Idukki and Wayanad and it is reported as 2,133,124, 1,056,929 and 785,840 respectively. Total urban population reported in Kerala is 15,934,926 among these 7,619,358 males and 8,315,568 females. It is also reported highest in Palakkad followed by Idukki and Wayanad, 676,810, 52,045 and 31,580 respectively. Urban population reported in Kerala is 47.7 per cent. It is 24.09 per cent in Palakkad, 4.69 per cent in Idukki and 3.86 per cent in Wayanad.

In terms of proportion scheduled tribe population constitutes 1.45 per cent of the total population, males constitute 1.42 per cent and females 1.49 per cent. Proportion during the last census was 1.14 per cent. Thus there has been an increase of 0.36 per cent in the proportion during the last decade. The highest proportion of schedule tribe population is reported from Wayanad at 18.53 per cent, Idukki at 5.03 per cent and in Palakkad at 1.74 per cent and the lowest in Thrissur district as 0.30 per cent. Scheduled tribe population in absolute numbers has increased by 1,20, 650. The highest number of scheduled tribe has been recorded in Wayanad as 1,51,443 and the lowest in Alappuzha 6,574. Male and female tribals in Wayanad are 18.54

and 18.51 per cent respectively. Idukki district's male and female tribal population is 5.06 and 5 per cent respectively. In Palakkad district male and female tribal population are 1.79 and 1.7 per cent respectively.

In terms of proportion scheduled caste population constitutes 9.1 per cent of the total population of the State. Male population is 9.22 per cent and female population is 8.99 per cent. There has been a decrease in proportion of 0.7 per cent during the last decade. The highest proportion of scheduled caste has been recorded in Palakkad at 14.37 per cent and the lowest in Kannur 3.30 per cent. Schedule caste population in absolute numbers has decreased by 84,368. In Palakkad it is 4,03,833 and in Kannur it is 32578.

Among the three selected districts scheduled caste population is reported highest in Palakkad followed by Idukki and Wayanad. It is represented as 14.37, 13.12 and 3.99 respectively. Male and female SC population in Palakkad district is reported as 14.52 per cent and 14.23 per cent respectively. In Idukki district male Scheduled caste population is 13.10 per cent and females are 13.14 per cent. The lowest is reported in Wayanad as male scheduled caste population is reported as 4.08 per cent and female scheduled caste population as 3.89 per cent. The decadal population growth 2001-2011 in Kerala among males is reported as 558,798 and females as 1,005,889 and a total population of 1,564,687. Among males it is reported as 3.61 per cent and females it is 6.14 per cent and an average percentage of 4.91. Female population growth in Kerala is much greater than their male counterpart. Compared to this the decadal population growth reported among males in Palakkad is 7.30 per cent, followed by Wayanad where it is reported as 2.66 per cent and in Idukki it shows a negative growth rate of -2.45 per cent. In females it is reported as 7.40 per cent in Palakkad, 6.78 per cent in Wayanad, and shows a negative growth rate of -1.13 per cent in Idukki district. The average decadal population growth in Palakkad is reported as 7.35, followed by Wayanad 4.71 per cent and it shows a negative growth rate of -1.79 per cent. Comparing the proportion of scheduled caste population and scheduled tribe population with the

general population, it is clear that scheduled caste population is the highest compared to scheduled tribes as the proportion of former in terms of general population. The decadal population growth shows an increase in trend among scheduled tribes vis-à-vis scheduled caste.

Table 4.4

District-wise Distribution of Tribal Population in Kerala

Districts	Population 2011	Per cent of STs in 1991	Per cent of STs in -2001	Per cent of STs in 2011	Per cent of STs to total population in 1991	Per cent of STs to total population in 2001	Per cent of STs to Total Population 2011
KERALA	484839	100	100	100	1.10	1.14	1.45
Kasaragod	48857	9.12	8.33	10.08	2.70	2.52	3.75
Kannur	41371	5.68	5.48	8.53	0.81	0.83	1.64
Wayanad	151443	35.82	37.36	31.24	17.21	17.43	18.55
Kozhikode	15228	1.69	1.63	3.14	0.21	0.21	0.49
Malappuram	22990	3.29	3.36	4.74	0.34	0.34	0.56
Palakkad	48972	11.05	10.88	10.10	1.50	1.52	1.74
Thrissur	9430	1.26	1.33	1.94	0.15	0.16	0.30
Ernakulam	16559	1.54	2.76	3.42	0.18	0.32	0.50
Idukki	55815	15.66	14	11.51	4.67	4.51	5.04
Kottayam	21972	5.61	5.04	4.53	0.98	0.94	1.11
Alappuzha	6574	0.57	0.86	1.36	0.14	0.15	0.31
Pathanamthitta	8108	2.16	1.8	1.67	0.58	0.53	0.68
Kollam	10761	1.21	1.43	2.22	0.16	0.20	0.41
Thiruvananthapuram	26759	5.04	5.74	5.52	0.55	0.65	0.81

Source: Census data, (1991, 2001 and 2011)

Table 4. 4 shows the district wise distribution of tribal population in Kerala based on 1991, 2001 and 2011. As per the 1991 census the scheduled tribe population of Kerala state is only 1.10 per cent. But in 2001 census, scheduled tribe population increases to 1.14 per cent of total population of the State. The decadal

population growth of ST population has been 13.5 per cent which is 4.1 per cent higher than the growth of the total population in 1991-01. In terms of proportion, scheduled tribe population constitutes 1.45 per cent of the total population, compared to the previous 1.14 per cent. Thus there has been an increase of 0.36 per cent in the proportion during the last decade. The highest proportion of scheduled tribes has been recorded in Wayanad at 18.55 per cent and the lowest in Thrissur 0.30 per cent. Percentage of tribes in each district in 1991 census shows that Wayanad stands first at 35.82 per cent, followed by Idukki 15.66 per cent and Palakkad 11.05 per cent. During 2001 census, the percentage of tribes in Wayanad changed to 37.36 followed by Idukki 14, Palakkad 10.88 and Kasargod 8.33. But we can infer change in tribal population in the State during 1991, 2001 and 2011. With regard to the inter-district differences, the size of tribal population is the highest in Wayanad. During 1991, population in Wayanad is 35.82 per cent and it increases to 37.36 per cent during 2001 census and it again declined to 31.24 per cent of tribal population of the State, which constitutes 18.55 per cent of the total population in the district. The second largest tribal concentration is in Idukki and its population also decline from 15.66 per cent from 1991 census to 14 per cent of 2001 census and declined to 11.51 per cent during 2011 census. Other significant concentrations are in the districts of Palakkad whose population during 1991 census was 11.05 per cent which declined to 10.88 per cent and 10.1 per cent during 2001 and 2011 respectively. Notable changes occurred in Kasargod district from previous census as the population decreased from 9.12 to 8.33 per cent and again increased to 10.08 per cent. Kannur and Malappuram districts show an increasing trend as Kannur population increases from 5.48 per cent to 8.53 per cent and Malappuram population rate increases from 3.36 per cent to 4.74 per cent. Thiruvananthapuram and Kottayam show a decline in trend of tribe population during previous census. And Alappuzha and Thrissur districts have the least tribal concentration as well as population of tribes. It can be further noted that tribes are more concentrated in hilly areas of the State. The tribal population in Kerala is segregated across all districts; but the majority is concentrated in Palakkad,

Idukki, Wayanad and Kasaragod as they constitute 62.93 percentage of the total tribal population.

Table 4.5
Population of ST communities

	Number	Percentage
Households	100912	
Population		
Male	197596	
Female	203805	
Total	401401	
Sex Ratio	1000:1031	
Tribal communities	40	
Highest tribal community	Paniya community	
Total households of Paniya community	21604	21.40
Population of Paniya community	92783	23.11

Source: KILA survey report, (2008)

Table 4.5 show information regarding tribal communities in Kerala based on KILA survey 2008 and it was published in 2011. According to the survey it is reported that there are 100912, tribal households in Kerala. Total tribal population in the State as 401401. Female tribals outnumber males showing a population of 203805 followed by male tribals at 197596. Their sex ratio is reported to be 1000:1031 and we can observe a slight change during census 2011. It is reported as total tribe population increased and sex ratio had increased to 4,84,839 and 1035 respectively. Tribal communities are reduced from 40 to 36. The highest tribal community in the State is Paniya community; their population is reported as 23.11 per cent and Paniya households in the district as 21.40 per cent. Nearly 80 per cent of average household size is less than 5.

Table 4.6
Age structure of Population

SI No	Age	Number	Percentage
1	0-3 years	24005	5.98
2	4- 5 years	15516	3.87
3	6-14 years	68706	17.12
4	15-17 years	17109	4.26
5	18- 59 years	243973	60.78
6	60 and above	32092	7.99
	Total	401401	100.0

Source: KILA survey report, (2008)

Age structure of population is classified into six categories- age group 18-59 years is reported as the highest (60.78 per cent), followed by 6-14 years , 60 and above, 0-3 years ,15-17 years and their corresponding percentages are 17.12 per cent ,7.99 per cent ,5.98 per cent ,4.26 per cent respectively. And the lowest age category is 4-5 years which is 3.87 per cent only.

Marital status of tribes shows that 46.26 per cent are married and 45.85 per cent are included as other categories. Widows are reported as 5.06 per cent, divorced are 1.67 per cent. Widowers are fewer, compared to widows as 0.94 per cent. It is also noted that 0.22 per cent of unmarried tribe mothers are also living in Kerala (KILA survey report, 2008).

4.3 Primitive Tribal Groups in Kerala State

The ST communities with pre-agricultural stage of development with diminishing population and very low literacy rates are defined as Primitive Tribes. There are five Primitive Tribal Groups (PTGs) in the state, viz. Kattunaikyen, Cholanaikan, Kurumba, Kadar and Koraga. According to the Baseline Survey Reports of the KIRTADS during 2006-2007, the Primitive tribal population is 24,285 (six per cent of total ST Population) and the number of households is 6523. But we can experience a change in KILA survey report 2008 and it is described in the table 4.7

Table 4.7
Primitive Tribal communities in Kerala

Tribal communities	Households (2007)	Population (2007)	Households (2008)	Population (2008)	Per centage (2008)
Koraga	422	1572	445	1644	0.41
Kattunaikyan	5055	18576	5137	19995	4.98
Cholanaikyan	82	363	101	409	0.10
Kadar	486	1695	545	1974	0.49
Kurumbar	478	2079	543	2251	0.56
Total	6523	24285	6771	26273	6.55

Source: Base line Survey Report of KIRTADS, (2007) & KILA survey report,(2008)

Based on KILA survey report 2008 primitive tribal communities in the Kerala are reported as 6.55 per cent and their population is 26273 and they have 6771 tribal households in Kerala. Koraga, Kattunayakan, Cholanayakan, Kadar and Kurumbar are primitive tribes in Kerala. The highest population of them is reported from among Kattunaikyan community is 19995 and the lowest is reported among Cholanaikan community is 409.

4.4 Educational Status of Tribes in Kerala

The tribes are the most backward section of the society in the State with regard to education. Incentives provided by the government voluntary organizations and other agencies with the aim of educating the tribes have not contributed much towards the educational advancement of the majority of the tribal communities in Kerala (Balakrishnan, 2004).

The highest literacy rate among the general community was reported from Kottayam district with 95.72 per cent and the lowest in Palakkad district with 81.27 per cent. The same is reported from among the tribes as only 88.69 per cent in Kottayam district and 34.87 per cent in Palakkad district (Census,1991). This shows there exists intra-regional disparity in educational status among the tribes of Kerala. Enrolment of tribal children is higher in lower primary school, whereas it is lower at upper primary, high school, pre-degree and graduation level,(Fedina,2000). The Scheduled Tribes literacy rate of Kerala is 75.8 per cent in 2011 which is indeed,

higher than that of 64.35 per cent registered during 2001 (Census of India, 2001). The ST literacy rates of Palakkad, Idukki and Wayanad districts show that Idukki is showing almost a central tendency to State's ST literacy rate. For the other two districts, Wayanad and Palakkad, the ST literacy is below the State average registering 70.5 per cent and 61.5 per cent respectively. , There exists a wide gender disparity among the tribes in Kerala. For Idukki and Wayanad, the male literacy is above that of the State average of STs. But, the female literacy falls below the State average for all the districts. An important observation which can be made from this figure is that tribes located in Palakkad and Wayanad districts have a poor literacy achievement, which is much below the State average of ST's (Suresh, 2015).

The literacy of Scheduled Tribes increased from 57.2 per cent in 1991 to 64.4 per cent in 2001. As regards literacy by sex, literacy rate of males increased from 63.4 per cent to 70.8 per cent and that of females from 51 per cent to 58.1 per cent. Literacy rates vary widely among the tribes in Kerala, with the Kattunaikyan reporting only 40.18 per cent while Kurichiyas enjoy a literacy rate of 78.21 per cent. Educational dropout rates are the highest among the tribes in Kerala. More than 85 per cent are not even clearing the secondary level of education. Major reasons for this adverse impact are poverty, failure and adverse conditions at home, and long distance, or difficulty to travel to reach the educational institutions. (Rajasenan and Rajeev, 2013).

Rajasenan and Abraham (2013) in their study pointed out that lack of education was the major threat towards their backwardness. This adversely affected their employment opportunities, which in turn reduce their access to amenities like health and nutrition. Inter tribe differences can be seen in educational status of tribes as illiteracy level of the backward tribes like the Kattunaikyan community and the Adiya community is more than 60 per cent, whereas that of Kurichyan community is a meager 11.6 per cent. Wayanad has the highest dropout compared to Idukki and Palakkad.

Table 4.8
Literacy Rates of Tribes

Sl No	Literacy Rate	Districts	Percentage
1	Highest	Kottayam	93.25
2	Lowest	Palakkad	57.63
3	Paniya community		65.90

Source: KILA survey report, (2008)

Tribes in Kerala have a literacy rate of 72.77 per cent, the highest literacy rate among tribes is reported in Kottayam district as 93.25 per cent and lowest is reported in Palakkad district as 57.63 per cent. Largest populated tribe Paniya community shows literacy rate of 65.90 per cent.

Table 4.9
Literacy Rate of Primitive Tribes in Kerala

Sl No	Tribal communities	Percentage
1	Koraga	74.18
2	Kattunaikyan	57.67
3	Cholanaikyan	47.44
4	Kadar	99.83
5	Kurumbar	54.79

Source: KILA survey report, (2008)

Primitive tribes are the least populated in Kerala and the highest literacy rate among them is reported by the Kadar community, followed by Koraga community, Kattunaikyan community, Kurumbar community and Cholanaikyan community. Primary data of the present study includes one of the primitive tribes, i.e. Kattunaikyan community, and it shows that 51.93 per cent of Kattunaikyan community is illiterate, 43.65 per cent of them completed primary school and only 4.45 per cent of them have high school education. Among the total illiterate tribes in the district the highest per cent of them are reported among the Kattunaikyan community. This clearly shows their backwardness.

Table 4.10
Literacy Rates among Tribes in Kerala

Sl No	Literacy rate	Number	Percentage
1	5 years and above	361880	90.15
2	Illiterates	98536	27.23
3	New literates	14360	3.97
4	Elementary education	248984	68.80
	Total	361880	100.0

Source: KILA survey report, (2008)

In Kerala literacy rates, of the tribal population aged five years and above are 90.15 per cent. At the same time, 68.8 per cent of tribes have elementary education and 3.97 per cent are new literates among tribes in Kerala. Another notable point is that 27.23 per cent of tribes in Kerala are illiterate. This shows one of the weaknesses of tribes in Kerala, as good education and health are important determinants of better living standards. And tribes in Kerala are far behind in them. Compared to three districts, primary data shows that illiterates are reported the highest in Palakkad (51.72 per cent), followed by Wayanad (37.25 per cent) and Idukki (22.48 per cent). No one has reported higher education and it is only 2.41 per cent of tribes in Palakkad, 1.07 per cent of them in Wayanad and 0.29 per cent in Idukki district have completed higher secondary education.

Table 4.11
Educational Status

SL No	Education	Number	Percentage
1	Primary	122685	49.27
2	Below SSLC	83619	33.58
3	SSLC	25310	10.16
4	Pre degree/ Plus two	13586	5.45
5	Degree	3100	1.24
6	P.G	422	0.07
6	Others	262	0.10
	Total	248984	100.0

Source: KILA survey report,(2008)

Table 4.11 shows that 49.27 per cent of tribes in Kerala have primary education, 33.58 per cent of them have less than SSLC qualification, 10.16 per cent of them have completed SSLC and only 5.45 per cent of them have completed Plus Two or Pre Degree. Higher qualifications like degree, P.G and other qualifications are 1.24 per cent, 0.07 per cent and 0.10 per cent respectively. The survey data also shows that no tribe community in the study has attained higher education. Only 3.77 per cent of three districts have attained higher secondary education. This helps to determine that tribes in Kerala are least blessed with higher qualifications. This shows one of the determinants to their backwardness.

Table 4.12
Educational Institutions

SI No	Educational Institutions	Number	Percentage
1	Govt Institutions	60876	68.32
2	Govt Aided	17357	19.48
3	Private institutions	8650	9.71
4	Self –Financing		
a	Govt	1197	1.34
b	Private	808	0.90
	Others	209	0.23
	Total	89097	100.0

Source: KILA survey report, (2008)

Table 4.12 shows that 68.32 per cent of tribes in Kerala are depend on government institutions for their education, 19.48 per cent approached for government aided institutions. Only 9.71 per cent are depend on private institutions. 1.34 per cent of them depend on government self-financing institutions. And 0.90 per cent of them depend on private self-financing with 0.23 per cent of them depend on other types of institutions.

Table 4.13
Educational Dropout Rate

SI No	Educational dropout rate	Number	Percentage
1	Primary	15393	46.34
2	Secondary	12907	38.85
3	Higher secondary	1453	4.37
4	Degree	473	1.42
5	Post Graduation	188	0.57
6	Diploma	1979	5.96
7	B-tech	9	0.03
8	MBBS	11	0.03
9	B A M S	2	0.01
10	Others	800	2.42
	Total	33215	100.0

Source: KILA survey report,(2008)

Table 4.13 shows that educational dropout rate was reported the highest under primary education at 46.34 per cent, followed by secondary education at 38.85 per cent. The lowest percentage reported from among the courses, like BAMS, MBBS, and B.Tech is 0.01 per cent, 0.03 per cent and 0.3 per cent respectively.

Table 4.14
Educational status of 15-59 age group of the unemployed

SI No	Education	Unemployed	Percentage
1	Illiterate	13759	17.71
2	Newly literate	1853	2.38
3	Primary	14843	19.10
4	Below SSL C	23530	30.29
5	SSLC	11853	15.26
6	Pre Degree/ Plus two	9366	12.05
7	Degree	2112	2.72
8	Post Graduation	200	0.25
9	Others	164	0.24
	Total	77680	100

Source: KILA survey report,(2008)

Table 4.14 shows the relation between education and unemployment and it is reported the highest among below SSLC category at 30.29 per cent, followed by primary, SSLC and Plus Two. Illiterate tribes reported an unemployment rate of 17.71 per cent. Although highly educated tribes are fewer in Kerala, their unemployment percentage is reported the lowest among P.G. and other category at 0.25 and 0.24 respectively.

Table 4.15
Technical Education of Unemployed (15-59 years)

Sl No	Technical education	Unemployed	Percentage
1	Vocational courses	1051	34.74
2	Diploma	386	12.76
3	B-Tech	9	0.30
4	MBBS	7	0.23
5	B –Tech students	219	7.24
6	Medical students	85	2.80
7	Others	1268	41.93
	Total	3025	100.0

Source: KILA survey report, (2008)

Table 4.15 shows that unemployment is reported the highest among other categories at 41.93 per cent, followed, by vocational courses at 34.74 per cent and the lowest is reported among B.Tech and MBBS at 0.30 and 0.23 respectively.

Table 4.16
Literacy Rates of Kerala in Wayanad, Idukki and Palakkad districts

Kerala	Wayanad			Idukki		Palakkad	
	Number	Percentage	Number	Per centage	Number	Per centage	
Literate	13,704,903	96.11	328,136	92.51	471,881	94.56	1,122,600
Male	14,430,921	92.07	317,449	85.70	451,129	89.45	1,116,892
Female	28,135,824	94	645,585	89.03	923,010	91.99	2,239,492
Persons							

Source: Census, (2011)

Total literates in Kerala are 94 per cent and male literates are 96.11 per cent and female literates are 92.07 per cent. Total literates in Wayanad district are 89.03 per cent; male literates are 92.51 per cent and female literates are reported at 85.70 per cent. Among the districts, Pathanamthitta tops in literacy at 96.93 per cent while Palakkad is at the bottom of the list. Among the three districts, Idukki shows the highest literacy and is reported as 91.99 per cent, male literates in Idukki district are 94.56 and female literates in Idukki district are reported as 89.45 per cent. Literacy rate of Palakkad district is reported at 89.31 per cent and male literates in the district are 93.10 per cent and female literates are 85.79 per cent. Table 4.17 discussed about educational status of tribes in study area.

Table 4. 17
Block wise Educational status of Tribes in Wayanad District

SL	Wayanad - Scheduled Tribes			Literates			Illiterates		
	District/ CD Block/ Town	Total/ Rural/ Urban	Persons	Male	Female	Persons	Male	Female	
1	Mananthavadi	Rural	35,005	18,889	16,116	21,330	8,999	12,331	
		Urban	-	-	-	-	-	-	
		Total	35,005	18,889	16,116	21,330	8,999	12,331	
2	Kalpetta	Rural	22,784	12,188	10,596	13,056	5,501	7,555	
		Urban	-	-	-	-	--	-	
		Total	22,784	12,188	10,596	13,056	5,501	7,555	
3	Sulthan Bathery	Rural	33,842	17,972	15,870	22,198	9,462	12,736	
		urban	-	-	-	-	-	-	
		Total	33,842	17,972	15,870	22,198	9,462	12,736	
4	Urban								
	Kalpetta	Urban	2,074	993	1,081	1,154	472	682	
	Wayanad								
		Rural	91,631	49,049	42,582	56,584	23,962	32,622	
		Urban	2,074	993	1,081	1,154	472	682	
		Total	93,705	50,042	43,663	57,738	24,434	33,304	

Source: Census, (2011)

Total literates in Wayanad district are 93,705, among whom 91,631 are in rural areas. A majority of tribes are settled in rural areas of the district. 2,074 literates are in urban areas. Total literates of male tribes are greater than their females, as males are reported at 50,042 and female literates are 43,663. Illiterate tribes in the district are 57,738 and it is clear that illiterates' tribes in the district are higher compared to literates' tribes. Illiterate females are higher and are reported at 33,304. 32,622 are concentrated in rural areas and 682 are them in urban areas. Male illiterates in the district are 24,434 among whom 23,962 are in rural areas and 472 in urban areas.

Table 4.18
Block wise Educational Status of Tribes in Idukki District

SL	Idukki - Scheduled Tribes District/ CD Block/ Town	Literates			Illiterates			
		Total/ Rural/ Urban	Persons	Male	Female	Persons	Male	Female
1	Muvattupuzha	Rural	-	-	-	-	1	-
		Urban						
		Total						
2	Devikulam	Rural	6,750	4,117	2,633	6,849	2,791	4,058
		Urban	-	-	-	-	-	-
		Total	6,750	4,117	2,633	6,849	2,791	4,058
3	Adimaly	Rural	4,919	2,729	2,190	3,670	1,587	2,083
		urban	-	-	-	-	-	-
		Total	4,919	2,729	2,190	3,670	1,587	2,083
4	Nedumkandam	Rural	1,200	674	526	585	230	355
		Urban	-	-	-	-	-	-
		Total	1,200	674	526	585	230	355
5	Idukki	Rural	7,247	3,669	3,578	1,491	641	850
		Urban	-	-	-	-	-	-
		Total	7,247	3,669	3,578	1,491	641	850
6	Kattappana	Rural	4,049	2,110	1,939	1,684	715	969
		Urban	-	-	-	-	-	-
		Total	4,049	2,110	1,939	1,684	715	969
7	Azhutha	Rural	3,309	1,732	1,577	956	380	576
		Urban	-	-	-	-	-	-
		Total	3,309	1,732	1,577	956	380	576
8	Thodupuzha	Rural	1,090	547	543	144	65	79
		urban	-	-	-	-	-	-

9		Total	1,090	547	543	144	65	79
	Elamdesom	Rural	9,630	4,974	4,656	1,669	773	896
		Urban	-	-	-	-	-	-
		Total	9,630	4,974	4,656	1,669	773	896
	URBAN							
		Urban	504	230	274	68	30	38
	Idukki	Rural	38,194	20,552	17,642	17,049	7,183	9,866
		Urban	504	230	274	68	30	38
		Total	38,698	20,782	17,916	17,117	7,213	9,904

Source: Census, (2011)

Total tribal literates in Idukki district are 38698 and 38,194 are in rural areas and 504 are in urban areas. Male literates in the district are higher compared to their females, as male literates are reported at 20782 and female literates are 17916. Highest literates are settled in Elamdesom block. Total illiterates in the district are lower and it is 17117. Among them 7213 are male illiterates and 9904 are female illiterates. The highest illiterates are located in Devikulam block. In Idukki district also female illiterates are higher, compared to their male illiterates.

Table 4.19
Block wise Educational Status of Tribes in Palakkad Districts

SL	Palakkad – Scheduled Tribes	District/ CD Block/ Town	Total/ Rural/ Urban	literate			Illiterates		
				Persons	Male	Female	Persons	Male	Female
1		Thrithala	Rural	252	122	130	74	31	43
			Urban	20	7	13	9	2	7
2		Pattambi	Total	272	129	143	83	33	50
			Rural	239	100	139	51	25	26
			Urban	95	51	44	14	8	6
			Total	334	151	183	65	33	32
3		Sreekrishnapuram	Rural	447	244	203	179	77	102
			urban	-	-	-	-	-	-
4		Ottappalam	Total	447	244	203	179	77	102
			Rural	126	63	63	38	20	18
			Urban	4	3	1	2	-	2
			Total	130	66	64	40	20	20
5		Palakkad	Rural	236	141	95	56	26	30
			Urban	30	16	14	12	5	7
			Total	266	157	109	68	31	37
			Rural	1,141	589	552	1,266	574	692
6		Mannarkad	Urban	122	59	63	176	83	93
			Total	1,263	648	615	1,442	657	785
			Rural	15,082	8,212	6,870	12,545	5,496	7,049
7		Attappadi	Urban	-	-	-	-	-	-
			Total	15,082	8,212	6,870	12,545	5,496	7,049
8		Malampuzha	Rural	1,171	654	517	1,106	484	622

	urban	706	363	343	280	134	146
	Total	1,877	1,017	860	1,386	618	768
9	Rural	108	55	53	36	10	26
	Urban	-	-	-	-	-	-
	Total	108	55	53	36	10	26
10	Rural	2,443	1,304	1,139	2,979	1,412	1,567
	urban	30	15	15	6	1	5
	Total	2,473	1,319	1,154	2,985	1,413	1,572
11	Rural	2,152	1,157	995	2,259	1,031	1,228
	Urban	-	-	-	-	-	-
	Total	2,152	1,157	995	2,259	1,031	1,228
12	Rural	1,013	519	494	780	354	426
	Urban	-	-	-	-	-	-
	Total	1,013	519	494	780	354	426
13	Rural	681	370	311	563	247	316
	Urban	17	7	10	6	4	2
	Total	698	377	321	569	251	318
	Urban						
1	Shoranur (M)	83	42	41	5	3	2
2	Ottappalam (M)	55	28	27	34	17	17
3	Ongallur -II (CT)	20	10	10	6	4	2
4	Ongallur -I (CT)	7	4	3	-	-	-
5	Pattambi (CT)	33	18	15	4	2	2
6	Muthuthala (CT)	35	19	16	4	2	2
7	Thrithala (CT)	14	5	9	5	2	3
8	Vaniyamkulam- II	4	3	1	2	-	2
9	Thirumittacode -II (CT)	6	2	4	4	-	4

10	Mannarkad-I (CT)	Urban	122	59	63	176	83	93
11	Palakkad (M)	Urban	183	108	75	30	23	7
12	Puthuppariyaram (CT)	urban	328	166	162	49	28	21
13	Hemambikanagar (CT)	urban	178	87	91	92	43	49
	Palakkad	Rural	25,091	13,530	11,561	21,932	9,787	12,145
		Urban	1,364	710	654	585	287	298
		Total	26,455	14,240	12,215	22,517	10,074	12,443

Source: Census,(2011)

In Palakkad district, total literates are 26,455 and 25,091 of them are in rural areas and 1,364 are of them in urban areas. 14,240 of them are male literates and 12,215 are female literates. Total illiterates in the districts are 22,517 among whom 10,074 are male illiterates and 12,443 of them are female illiterates.

Table 4.20
Community-wise Dropout Rate of School Students (in Per cent)

Year	All Communities	SC	ST
2007-08	0.83	0.96	4.54
2008-09	0.66	0.72	3.54
2009-10	0.51	0.58	2.36
2010-11	0.53	0.55	2.52
2011-12	1.05	0.61	3.71

Source: DPI- Kerala, (2014)

Table 4.20 explains the dropout rate of school students in Kerala. Dropout rate of STs is higher, compared to SCs and other communities. From 2007-08 to 2010-11 educational dropout rate among STs , SCs and other communities is declining and it again increased to 3.71 per cent ,0.61 per cent and 1.05 per cent respectively.

Table 4.21
Literacy of Scheduled Tribes and General State Average

Year	1961	1971	1981	1991	2001	2011
General Literacy	55.08	69.75	78.85	89.81	90.92	93.91
ST Literacy	17.26	25.72	31.79	57.22	64.35	75.81
Gap in Literacy	37.82	44.03	47.06	32.59	26.57	18.10

Source: Census of India, (1961 - 2011)

Table 4.21 explain literacy rate of STs to the general literacy level. From 1961 to 2011 STs Literacy level in Kerala has been increasing. During the period of 1961 STs Literacy rate was 17.26 per cent and it increased to 75.81 per cent during 2011 census. Result is a declining gap in literacy of STs to general literacy rate.

Table 4.22

Gender-wise General and ST Literacy Rate

Year	General Literacy			ST Literacy		
	Male	Female	Total	Male	Female	Total
2001	94.24	87.72	90.86	70.80	58.10	64.40
2011	96.02	91.98	93.91	80.76	71.08	75.81

Source: Census of India, (2001, 2011)

Table 4.22 explains the general literacy and STs literacy among males and females. The overall literacy rate of Kerala is 93.91 per cent and that of the Scheduled Tribes is only 75.81 per cent, but it is much higher than the national average ST literacy rate of 59 per cent (Census of India, 2011). Both male and female literacy has increased from 2001 to 2011. Male literacy has increased from 70.8 per cent to 80.76 per cent and female literacy reached 71.08 per cent in 2011 from 58.1 per cent in 2001. Even though, there was a significant increase in the literacy rate of both males and females, it is far below the general literacy rate of males and females in Kerala.

Table 4.23

Literacy Rates among Social Groups

Level of Education	ST	SC	OBC	Others
Illiterate	26.36	23.6	17.36	11.67
Literate Without formal schooling	0.33	1.80	0.93	0.86
Below Primary	16.12	17.05	18.31	12.30
Primary	12.50	20.99	19.76	14.93
Middle	26.32	25.67	27.52	26.00
Secondary	8.22	7.49	10.72	19.50
Higher Secondary	5.26	1.67	3.20	7.44
Graduation above	4.90	1.73	3.20	7.30

Source: Kerala Human Development Report, (2005)

Table 4.23 shows the literacy rate among social groups and it shows that illiterates are the highest among schedule tribes, followed by schedule castes, OBC and other communities. We can observe a change in higher education, i.e. graduation and above compared to STs, SCs and OBC. Scheduled tribes reported the highest

followed by OBC and scheduled caste. Other communities reported the highest literacy rate at 7.30 per cent.

Table 4.24
Enrolment of ST students for Undergraduate and Postgraduate Courses in Kerala

Courses	2006-07		2007-08		2009-10		2010-11	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
M.Phil./PhD	0	0	0	13	1	0	1	0
MA	33	68	48	85	62	95	63	98
MSc	24	56	33	72	56	70	61	72
M.Com.	19	26	25	25	25	29	27	33
BA	376	562	590	925	550	917	528	921
BSc	124	242	200	330	244	379	248	382
B.Com	162	183	240	262	206	216	226	223
Total	738	1137	1136	1712	1144	1706	1154	1729
Growth(In per cent)	-	-	53.93	50.57	0.70	-0.35	0.87	1.35

Source: Directorate of Collegiate Education, Thiruvananthapuram, (2013)

Table 4.24 shows the enrolment of schedule tribe students for under graduate and post- graduate courses in Kerala. Enrolments of STs to the M. Phil, Ph.D. are less and we can observe a slight increase in girl's enrolment during 2007-08. Compared to under- graduate programmes enrolment of STs in postgraduate programmes is lower and we can observe a slight increase during 2010-11. It is important to note that there is a negative growth rate among girls during 2009-10.

4.5 Employment Status of Scheduled Tribe Population

Agriculture is the main livelihood of tribes in Kerala. Land Alienation Act is a threat for agriculture, which, in turn manifests in the form of food and nutritional insecurity among the tribes. Tribes in Wayanad and Palakkad work as hired agricultural labourers whereas in Idukki some of the tribes manage to earn livelihood by cultivating their own land or by working as agricultural labourers (Rajasenan and Nikitha, 2013). There is substantial difference between tribal communities and also the employment options (Paul, 2013). Only 40.28 per cent of

the tribes were engaged, employed or engaged in the main occupation. Among the tribal workers 55.47 per cent were agricultural labourers and 16.66 per cent among them were cultivators, 53.96 per cent of the tribes were unemployed and 5.76 per cent among them were marginal workers (Balakrishnan, 2004).

A study conducted by Fedina (2000), a non-governmental organization, reported that female work participation is high among the tribes in Wayanad district. There are 8793 female wage labourers in Sulthan Bathery taluk. 92 boys and 70 girls below the age of 14 go for work. This shows their lack of interest in education and they treated children as a means of income to reduce their poverty. In Kerala many tribes have already dispersed to diversified economic activities to find their livelihood.(Mahendrakumar, 1998). Employment generating schemes under tribal sub plan have not been effective so far. A minor consolation they are having at present is job provided under MNREGS, (Rajasenan and Rajeev ,2013). Tribes who are employed are mainly engaged in activities which are seasonal in nature. The most important among them are farmers and agricultural labourers. Most of the household members among the FCs and the Forward STs are self-employed in the agriculture and allied sectors. But the share of SCs and the Backward STs in this regard appears to be negligible. Constraints such as lack of skills, cultural barriers and language issues adversely affected the backward STs (Rajasenan et al., 2014)

Table 4.25
Employment Status (Above 5 years)

Sl No	Employment	Number	Percentage
1	Collection of forest resources	4160	1.15
2	Agriculture	22727	6.28
3	Production of traditional items	1220	0.34
4	Animal husbandry	4032	1.11
5	Small scale trading	286	0.08
6	Collection of herbal medicine	639	0.18
7	Agriculture labourers	110823	30.62
8	Forest labourers	9816	2.71
9	100 days job	10189	2.82
10	Non- agricultural labourers	19314	5.34
11	Estate labourers	1321	0.37
12	Govt / Semi Govt job	7096	1.96
13	Permanent job in Private sector	1755	0.48
14	Permanent job in forest area	176	0.05
15	Permanent job in estate area	755	0.21
16	Unemployed	167571	46.31
	Total	361880	100

Source: KILA survey report, (2008)

Table 4.25 shows that a majority of tribes worked as agricultural labourers in Kerala showing 30.62 per cent, followed by works such as agriculture and it is reported as 6.28 per cent. 46.31 per cent of tribes in Kerala are reported as unemployed. This unemployment adversely affected their standard of living.

Table 4.26
Skilled labourers

Sl No	Employment	Number
1	Engineering jobs	792
2	Treatment therapy	768
3	Teaching	520
4	Technical employment	606
5	Stitching	1522
6	Handicraft	1815
7	Driver	2309
8	Industrial job	532
9	Others	3568
	Total	12432

Source: KILA survey report,(2008)

Various types of skilled labourers can be seen among the tribes in Kerala. Drivers, artisans and tailors are reported as the largest number among skilled labour force. Another category is reported as 'others'. This category of workers also made large contributions as skilled labour among tribes in Kerala.

Table 4.27
Agriculture and related information

SI No	Agriculture and related information	Tribal hamlet
1	Agriculture using traditional method	1500
2	Agriculture using modern method	455
3	Mixed method of both traditional and modern	1405
4	Services needed for promoting agriculture in their hamlet	455
5	Hamlet not suitable for agriculture due to lack of water supply	2145
6	Hamlet suitable for barrage protection programme	1572
7	Hamlet not suitable for current small scale irrigation project	170

Source: KILA survey report, (2008)

Table 4.27 provides the details of agriculture methods used in tribal hamlets. Data shows that 1500 tribal hamlets are using traditional method for agriculture, 2145 tribal hamlets are not suitable for agriculture due to lack of water supply, 1572 tribal hamlets are suitable for barrage protection programme, 1405 tribal hamlets are using mixed methods of both traditional and modern techniques, 455 tribal hamlets are using both modern method and services needed for promoting agriculture in respective hamlets and 170 tribal hamlets are not suitable for current small scale irrigation project. Tribes engaged in animal husbandry shows that 12068 households are using animal husbandry as their livelihood.

Table 4.28
Unemployed (15-59 years) among the skilled labourers

Sl No	Skilled Employment	Unemployed	Percentage
1	Engineering jobs	223	10.80
2	Treatment provision	209	10.10
3	Teaching	113	5.47
4	Stitching	687	33.25
5	Handicraft	52	2.52
6	Driver	186	9.00
7	Industrial job	187	9.05
8	Others	409	19.80
	Total	2066	100.0

Source: KILA survey report, (2008)

Unemployment is also reported among skilled labourers and it is reported the highest among stitching category and lowest among handicraft category.

Table 4.29
Unemployed in the age group of 15-59

Sl No	Age	Unemployed No:	Percentage
1	15-29 years	51943	66.87
2	30-44 years	13449	17.31
3	45- 59years	12288	15.82
4	Total	77680	100.0

Source: KILA survey report, (2008)

It is a pathetic situation that unemployment is reported the highest in the age category of 15-29 years, followed by 30-44 years and 45-59 years respectively. They are 66.87 per cent, 17.31 per cent and 15.82 per cent respectively. From this it is evident that the youngest working generation is unemployed among the tribes in Kerala

4.6 Land Alienation

Land as an asset acts as a reinforcing factor in the economic, social and culture life of the tribes in a primary agrarian setup. It provides livelihood as well as nutritional security to the tribal community, which has not been exposed to the

modern ways of life (Rajasenan and Nikitha, 2013). Outside construction by some business and real estate groups in the name of development with greed for profit has destroyed the virgin ecosystem resulting in the flight of the tribals. This has in turn resulted in land alienation on a massive scale leading to segregation and shifting of the tribes from one settlement to another (Rajasenan and Nikitha, 2013).

Tribal habitation got surrounded by the settlers for raising plantations and farming. In the process, the tribal hamlets and settlements got encroached upon and isolated from each other depriving continuity. Soon they lost command over land resources which were exploited at the given level of technology though by less intensive systems, such as hunting, shifting cultivation and collection of forest produce. They withdrew to the more interior forests and mountains heights and the areas of operation thus shrank. On account of the incessant influx of plains people, they became minorities numerically in their traditional habitat (Balakrishnan, 2004). Land alienation is not limited to land related activities. It has a wide ramification in education and health attainments of the tribes, which in a way give rise to poverty and social exclusion (Rajasenan and Nikitha, 2013). Land is the be all and end all of the livelihood of the tribes. Land alienation poses the biggest threat to the very existence of tribes in Kerala. Government introduced many measures to overcome the same. But these measures are partially effective.

Rajasenan (2014) in his study clearly states that land alienation seriously disrupts the pattern of settlement since the tribes are forced to move from one settlement to another. This has adversely affected the socio-economic characteristics of tribes. 10731 tribal households together possess 1764964 cents of land with ownership documents, of which 740954 cents are in use for various purposes. 1137 tribal households have lost 145923 cents of land. The reasons for tribal land alienation include encroachment made by big windmill companies, resorts and farm developers. The situation is further vitiated by the Wildlife Protection Act 1972, the Forest Conservation Act 1980 and the National Forest Policy 1988.

Table 4.30
Mode in which land acquired by the tribes

Sl No	Sources	Households	Percentage
1	<i>Kudikidappu</i>	2539	2.53
2	By means of Government <i>kudiyirippu</i>	8748	8.74
3	Descended from joint farming	690	0.64
4	Excess land	3622	3.62
5	Forest land area having land ownership	8224	8.21
6	Forest land area without land ownership	8846	8.83
7	Hereditary	44390	44.34
8	By own means	10234	10.22
9	<i>Puramboke</i>	928	0.93
10	Land of landlord	1701	1.70
11	Encroached land	1496	1.49
12	Rehabilitation land	364	0.36
13	Others	8337	8.32
	Total	100119	100.0

Source: KILA survey report, (2008)

Table 4.30 shows the modes in which lands are owned by tribes in Kerala. The data shows that 44.34 per cent of tribes have acquired their land ownership by inheritance, 10.22 per cent by own means, 8.83 per cent have their land in forest area without any land ownership, 8.21 per cent have their land in forest area having ownership. 8.74 per cent by means of government *kudiyirippu*, 8.32 per cent by other means, 3.62 as excess land, 2.53 per cent by *kudikidappu*, 1.70 per cent land of landlord, 1.49 per cent acquired as encroached land, 0.64 per cent by means of descended from joint farming, 0.93 per cent *purambhoku*, and 0.36 per cent as rehabilitation land.

Table 4.31
Area of Land acquired by Tribes

Sl No	Area of land	Households	Percentage
1	Less than 5 cent	20027	20.00
2	5-9 cent	14977	14.96
3	10-24 cent	16265	16.26
4	25-49 cent	9178	9.17
5	50-99 cent	12256	12.24
6	More than 100 cents	27416	27.31
	Total	100119	100

Source: KILA survey report, (2008)

Table 4.31 shows area of land acquired by tribes in Kerala. 27.31 per cent households have more than 100 cents of land, 20 per cent have less than five cents of land, and 16.26 per cent has 10-24 cents of land. 14.96 per cent have 5-9 cents of lands, 12.24 per cent have 50-99 per cent of land, and 9.17 per cent households have 25-49 cents of land.

Table 4.32
Details of Tribes those who have lost their land

SI No	Area of land	Households	Cents/acre
1	10 cents and above	119	60.95
2	10-29 cents	137	806.20
3	50- 100 cents	101	432.41
4	100 cents and above	696	2661.73
	Total	1053	3961.29

Source: KILA survey report, (2008)

Table 4.32 shows that 119 households have lost 10 cents and above lands , 137 households have lost 10-29 cents of land, 101 households have lost 50-100 cents of land and 696 households have lost 100 cents and above lands in Kerala.

Table 4.33
Households of tribes having land without any legal document

SI No		Households	Area of land which are using (Acre)
1	Without obtaining any legal document	8317	14602
2	Those who are residing in the area of wild animals	426	715
3	Those who are living inside forest area	52	19
4	Tribes living by means of capturing forest area	2939	2271
5	Those who are residing in <i>purampoke</i>	1330	335
6	Those who are keeping excess land	1962	1237
7	Those who are occupying revenue land	1037	597
	Total	16053	19776

Source: KILA survey report, (2008)

Table 4.33 shows the details of tribal households having land without any legal document. 8317 households have land without any legal document, 2939 households are living by capturing forest area, 1962 are keeping excess land, 1330 households are residing on *purampoke*, 1037 households are occupying revenue land, 426 households are residing in the area of wild animals and 52 households are living inside the forest area and 1.74 per cent of tribal households have lost their land for want of any legal document.

The migration to Attappadi also means that the Adivasis have been alienated from their lands. The process of land alienation was not a one-time affair, but continues to take place even today through land transactions (both legal and illegal). Leasing and mortgaging have emerged as the two ways in which possession continues to be transferred out of the Adivasis' hands (Haseena, 2015). Inability to repay loans through pledging of land and cultivation of tribal land by non-tribes on nominal lease for a short period retaining the land even after the stipulated time lead to serious social problems in the area. There are also umpteen instances of blatant grabbing of land, and dispossession of the Adivasis using physical force. Hence, land alienation continues to be a serious social problem in the area.

Table 4.34
Extent of land alienated from Adivasis was published in the government report of 1982.

Tribal communities	No: of houses	No: of families	Population	Cultivated area	Area alienated in acres
Kurumba	203	216	938	3304	26.00
Mudugar	388	417	1691	1266.25	1083.78
Irular	3152	3310	14958	11580.89	8996.41
Total	3743	3943	17587	16151.14	10106.19

Source: KILA survey report, (2008)

Table 4.34 explains the extent of alienated land of Kurumba, Mudugar, and Iruar communities which together constitute 10106.19 acres of alienated land in Attapadi

Table 4.35
Tribal hamlets situated nearer forest area

SI No		Hamlet	Households
1	Within reserve forest	504	15912
2	Close to reserve forest	948	23455
3	Other places	3192	55661
	Total	4644	95028

Source: KILA survey report,(2008)

There are 1303 tribal hamlets faced with wild animal threat in Kerala. 15912 households in 504 tribal hamlets are situated within the reserve forest, 23455 households in 948 tribal hamlets are situated close to reserve forest, and 55661 households in 3192 hamlets are situated in other places.

4.7 Income Status of Tribes in Kerala

Table 4.36
Details of tribes who get pension

SI No	Nature of pension	Number
1	Widow pension	3456
2	Old age pension	4446
3	Handicapped pension	687
4	Freedom fighter pension	2
5	Agricultural labourer pension	2208
6	Payment for non –working people	391
7	Other social pension	255
8	Service pension	1100
	Total	12545 (3.12%)

Source: KILA survey report, (2008)

Table 4.36 shows that there are 3.12 per cent of tribes in Kerala availing various types of pensions. 4446 tribes are receiving old age pension, 3456 tribes are receiving widow pension, 2208 tribes are receiving agricultural labour pension, 1100 tribes are receiving service pension, 687 of them are receiving handicapped pension, 391 of them are receiving payment for nonworking people, 255 of them are receiving other social pension, and two of them are receiving freedom fighter pension.

Table 4.37
Membership in co-operative credit society and insurance coverage

Sl No	Membership in co-operative credit society and insurance coverage	Households	Percentage
1	Households having member ship in co-operative credit society	21761	(22%)
2	Households having insurance coverage	15003	(15%)

Source: KILA survey report, (2008)

Data shows that 22 per cent of tribal households have membership in co-operative credit society and 15 per cent of them have of insurance coverage.

Social security among tribes in Kerala shows that 76 per cent of tribal households have ration cards and 24 per cent of them are living without ration card. There are 2436 destitute households, 1176 dependent households, 778 destitute care consumer households among tribes in Kerala. 61 per cent of tribal hamlets have Kudumbashree neighbourhood services, eight per cent tribal hamlets have *purusha* self-help group and 1878 neighbourhood groups have only tribals as members (KILA survey report,2008)

To explain poverty, it is necessary to explain infrastructure, as poverty cannot be calculated in terms of income alone. So to explain multi- dimensional aspects of poverty, it is essential to include infrastructure facilities of tribes in Kerala.

4.8 Infrastructure facilities of Tribal Households in Kerala

4.8.1 Housing Conditions

In the past, tribal huts were made of bamboo and were thatched with leaves, straw or grass. But, after the introduction of housing schemes for the tribal communities, their traditional methods of house construction radically changed. In the past, the tribes lived and moved within deep forests. They built their houses near their agricultural land. Agricultural labourers also made their huts near the farming plots. In the past, they shifted their huts regularly. They rarely stayed in a place for more than a year or two at a stretch. But they lost all these privileges due to the vested interests of the landlords and frequent large scale migration of non-tribals. Landless agricultural laborers among them were forced to vacate their dwelling sites at a regular interval. The landlords allot the dwelling sites only for a short period of time. After this, the tribals await the pleasure of the landlord to have fresh allocation. Generally, the new site allocated by the landlord will be far away from their old settlement. Consequent upon this method of shifting dwelling sites, the tribals made the huts only for a short period (Balakrishnan, 2004).

Traditionally agricultural communities like Kurichyans, Mullakurumans, etc. from time immemorial constructed well-built houses and preserved the cleanliness of their houses and surroundings (Balakrishnan, 2004). Kurichyans, Mullakurumans, Kanikkars and Irulas live in scattered homesteads. In contrast, Paniyans, Adiyans and Mavilans, Kattunaikyans, Kadars, Malappandarams, Malaivedans, Malaimalassar and Aranadan communities huts are clustered. Cholanaikyans, a primitive tribe in Nilamboor forest area of Malappuram district, live in scattered cave dwellings. We can also observe the inter-regional variations in the dwelling sites. Malayarayangans of Kottayam and Idukki district live in scattered houses. It can be observed that in the Malabar region the huts of the non-self-cultivating communities are clustered. We can observe inter-community and inter-regional variations of housing conditions among tribes in Kerala. 1749 families in Wayanad district do not have housing facilities. Among those people who own houses, only 303 families

have concrete houses. Other houses are made of hey, coconut palm leaves etc. There are 4264 self-constructed houses and the other houses are totally financed by the government and NGOs (Fedina, 2000).

The quality of housing among tribes is moderate in nature as very good houses (pucca houses) and very poor houses (unserviceable kucha) accounted for only 7.7 per cent and 9.3 per cent respectively (Paul, 2013). Forward tribes occupy 65 per cent of the pucca houses. But 32.4 per cent of backward Irula community have pucca houses and these houses were constructed and given to them under the housing scheme of AHADS (Attappadi Hills Area Development Society).

Government schemes for providing financial assistance to construct latrines have not been effective at all in backward communities like Kattunaikyan and Urali where more than 75 per cent of the houses do not have the facility. In the case of backward communities like Muthuvan and Adiya also, close to 60 per cent of the houses do not have latrines. The intra community difference is negligible in the status of latrines in communities that have reported no latrines (Paul, 2013). In the case of Irula community, 59 per cent have latrines while 41 per cent houses reported no latrines. The conditions of Paniya community is better, compared to other backward communities where only 28 per cent houses do not have latrines. One reason for this could be that the Paniya settlements surveyed were closer to the main stream society, compared to other backward communities which could have had an influence on constructing/maintaining a latrine. Even in houses that have latrines, 77.6 per cent do not have water connection inside the latrine. The forward communities jointly account for 77 per cent of the houses that have proper latrines. Among the forward communities, Kurichya community occupies 40 per cent of the houses that have proper latrines. Sanitation facilities are inadequate in Wayanad tribal belt and this makes these households vulnerable to several ailments including contagious diseases. They in turn reduce their working and earning capacity. Even if they have been made available through governmental schemes, allied facilities like roof, door, and water supply are absent. Households with no latrine come to about 70

per cent among the Kattunaikyans, 46 per cent among Urali and 40 per cent each among the Adiyans and Paniyans. In the case of forward communities like Kurumans and Kurichyans a majority of them have latrines with both roof and door. But the major problem faced by them is lack of water connection.

Safe drinking water facility is absent in most of the tribal hamlets. Among the tribal hamlet only 1.17 per cent in Idukki, 7.61 per cent in Palakkad, and 8.22 per cent in Wayanad have access to safe drinking water within the hamlet itself. Sometimes the tribes have to walk more than three kilometers to collect water for drinking and other purposes (Rajasenan and Nikitha ,2013). 47 per cent of the Kurichyans have a well or bore well within their household, whereas Kattunaikyan community has only 3.1 per cent of this facility in their households. So they have to depend upon ponds, rivers, streams, etc. for water (Rajasenan.et.al. ,2013).

Only 16 per cent of Kuruman and 14.3 per cent of kurichyan tribes live in pucca houses. The houses of kattunaikyan are mostly kutcha ones, but out of this 40 per cent of them are unserviceable. Majority of Adiyans and Paniyans stay in Kutcha or serviceable kutcha houses and 51.9 per cent of Urali communities stay in serviceable kutcha houses (Rajasenan and Abraham, 2013).

Only 7.7 per cent of the tribal households have access to cooking gas. Kattunaikyan, Adiyans and Urali communities have no access to cooking gas. The study also revealed that 2.8 per cent of the Paniyan tribes use gas for cooking. But the use percentage is comparatively higher in the case of the better off tribes like the kurumans, i.e. 22 per cent and 17.1 per cent of Kurichyan tribes in the district (Rajasenan and Abraham, 2013).

Though 64.3 per cent of the tribal households in Wayanad are electrified, those that use electricity as the main source of lighting are limited. The Kattunaikyan, the Adiyans, the Uralis and the Paniyans mostly use kerosene lamp and firewood for lighting. But the Kurichyans and Kurumans depend mostly on electricity for the same (Rajasenan and Abraham, 2013).

Table 4.38
Ownership of house

Sl No	Ownership of house	Households	Percentage
1	Own houses	91137	90.31
2	Along with relatives	4899	5.00
3	Rent	1014	1.00
4	Shed	2074	2.06
5	Others	1788	1.63
	Total	100912	100.0

Source: KILA survey report, (2008)

Table 4.38 shows that total tribal households in Kerala are 100912. Of these households, 90.31 per cent of tribes are living in own houses, five per cent are living along with relatives' households, one per cent in rented households, 2.06 per cent live in sheds and 1.63 live in other types of houses.

Table 4.39
Financial support of own houses

Sl No	Recourses sources	Households	Percentage
1	Government support	57481	63.07
2	Own income	20705	22.72
3	Government support/ similar support	10001	10.97
4	Others	2950	3.24
	Total	91137	100.0

Source: KILA survey report, (2008)

Table 4.39 shows the financial support received for the construction of houses by tribes in Kerala. 63.07 per cent houses were constructed with the support of government, 22.72 per cent were constructed with their own income, 10.97 per cent were constructed with government support or similar support, and 3.24 per cent were constructed by other means.

Table 4. 40
Conditions and facilities of own houses

Sl no	Conditions and facilities of own house	Households	Percentage
1	Not satisfactory	50414	55.32
2	Without kitchen	39850	43.73
3	Low square feet	46801	51.35
4	No facilities for keeping domestic animals	80789	88.65
5	No facilities for keeping firewood and working materials	79373	87.09

Source: KILA survey report, (2008)

Table 4.40 shows the conditions and facilities in tribal households. 55.32 per cent households of tribes are reported as not satisfactory, 43.73 per cent are without kitchen houses, 51.35 per cent of households are with low square feet area, 88.65 households do not have any facilities for keeping domestic animals, and 87.09 per cent households have no facilities for keeping fire wood and working materials.

Table 4.41
Information regarding Landless, homeless and available houses

Sl No	Information regarding landless, homeless and available houses	Households	Percentage
1	Landless	4614	4.57
2	Homeless	8781	8.70
3	Houses which are not suitable for living	31648	31.36
4	Partially not suitable for living	25850	25.61

Source: KILA survey report, (2008)

Table 4.41 explains the information regarding landless, homeless and available houses of tribes in Kerala. Data shows that 4.57 per cent are land less tribes, 8.70 per cent are homeless, 31.36 per cent of houses are not suitable for living and 25.61 of houses are partially not suitable living conditions.

Certain tribal women are considered as special preference women and they are classified as unwed mothers, unwed mother headed households, widow headed households, female headed households, matured female included households, and

widow/ divorced women included in the households. Table 4.42 gives information regarding housing conditions of special preference women in Kerala.

Table 4.42
Housing conditions of special preference women

Sl No	Housing conditions of special preference women	Households	Percentage
1	Land less and houseless	1344	3.33
2	Houseless	1782	4.42
3	Unsuitable living condition houses	19042	47.21
4	Partially suitable for living	18170	45.04
	Total	40338	100.0

Source: KILA survey report, (2008)

There are 40338 special preference women households in Kerala. 3.33 per cent of them are living in land less and houseless conditions, 4.42 per cent of them are houseless, 47.21 per cent of them are living in unsuitable living condition houses. 45.04 per cent of them are living in partially suitable for living houses.

Sanitation facilities of tribal communities in Kerala give the information that there are 32 per cent of tribal hamlets and 49 per cent of tribe households have without any toilet facilities.

Table 4.43
Drinking water facilities within the tribal hamlets

Sl No	Sources	Tribal hamlets
	Total tribal hamlets	4644
1	Private wells	3666
2	Spring	501
3	Bore well	255
4	River/ Pond	701
5	Pipe	800
6	Trap/Snare	523
7	Others	1047

Source: KILA survey report, (2008)

Table 4.43 shows drinking water facilities of tribes within the hamlets. There are 3666 hamlets in which tribes are using private wells in Kerala, 501 tribal hamlets are utilising spring facilities, 255 of hamlets have bore well facilities, 701 of them have approachable river/ponds for their drinking water, only 800 tribal hamlets have pipe facilities, 523 of them have trap/snare facilities. 1047 tribal hamlets are using other types of facilities for drinking water consumption.

Table 4.44
Availability of Electricity within the tribal hamlet

SI No	Tribal hamlet	Number	Percentage
1	Without electricity	1252	27.00
2	Electrified (street light availability)	545	44.00
3	Chances for hydroelectric projects	840	18.00

Source: KILA survey report, (2008)

Table 4.44 shows the availability of electricity within the tribal hamlets and the data shows that 27 per cent of hamlets in Kerala lack electricity, 44 per cent of tribal hamlets have street light, and 18 per cent of them have access to hydroelectric projects. 59 per cent of tribal households in the state do not have access to electricity more over 48 per cent of tribal students are living in not electrified households in Kerala.

Table 4.45
Energy utilisation

SI No	Sources	Households	Percentage
1	Fire wood	96027	95.16
2	Kerosene	1635	1.62
3	LPG	3157	3.13
4	Others	93	0.09
	Total	100912	100.0

Source: KILA survey report, (2008)

Table 4.45 shows energy utilisation for cooking in the households. Households are using fire wood, Kerosene, LPG, others and are reported as 95.16 per cent, 1.62 per cent, 3.13 per cent, 0.09 per cent respectively.

Table 4.46
Tribal hamlet without road facilities

Sl no	Tribal hamlet without any road facilities	Households
1	Houses having lack of road availability	9465
2	Houses within water shed land	505
3	Roads which are not suitable for rainy seasons	3721
	Total	13691 (14%)

Source: KILA survey report, (2008)

Table 4.46 shows tribal hamlets without any road facilities. It is reported that 14 per cent in Kerala. Houses having lack of road availability is reported as 9465, houses situated within water shed land are reported as 505 and roads which are not suitable for rainy seasons are 3721. Two per cent of tribal households are situated in remote areas and 1189 households do not have any road facilities, 46 are situated within water shed land 217 houses are situated in those areas which are difficult to reach during rainy seasons.

4.9 Poverty Status among Tribes in Kerala

The incidence of poverty among the tribal community of Kerala is half that of all India. The index of deprivation based on four basic necessities for well-being, such as housing quality, access to drinking water, good sanitation and electricity for lighting, Wayanad district has the highest index of deprivation (66) followed by Idukki (65.3), Kannur (61.3) and Thiruvananthapuram (60.1) registering indices greater than those of the state average (57.9) (HDR, Kerala. 2005). HDI is very low among tribal communities. Only the Kurichyar, Malayarayan and Kurumar communities have a comparatively good HDI profile of 0.6 point, while the

Muthuvas, Adiyans and Kattunaikans, etc. have a very low HDI profile of 0.4 points (Sunitha ,2014). Communities like Adiyans, Paniyar, Kattunaikyan, Urali, Muthuvan and Irular have very low income due to their poor occupational profile. Tribal communities like the Kattunaikyan, the Adiyans, the Paniyans and the Uralis have low SLI. But the situation of the Kattunaikyan tribe is deplorable in terms of the variables used for SLI analysis inter alia education and settlement pattern. This makes the Kattunaikyan the most primitive among the tribes in Wayanad (Rajasenan and Abraham, 2013).

On the basis of per capita income poverty estimate 40 per cent of the tribal families fall below poverty line. As per capita expenditure poverty estimate, 26 per cent of the households fall below poverty line. According to the income poverty estimates, 58 per cent of the Kurichyar households are poor, which is substantially higher. It is mainly due to the difficulty in estimating monthly household income as it is seasonal in nature, family property being undivided. According to the expenditure estimates, poverty is relatively low among Paniyars, one of the poorest tribal communities in Kerala. This is because of high health expenditure due to persistent ill-health and high spending on alcohol and tobacco (Sunitha ,2014).

Poverty profiles and estimates from micro-studies show that 62 per cent of tribal groups live below poverty line (UNDP, 2005). The incidence of poverty among the tribes is the highest both in rural (44.2 per cent) and urban areas (37.5 per cent) as compared to other social groups. (Mohammad Akram, 2007). Demographic characteristics of poor households that helped identify the demographic determinants of poverty have been examined by Sundaram and Tendulkar (2004). Rajuladevi (2000) examined the poverty profile of landless female labour households in wet and dry villages with reference to income, management and borrowings. The tribals still continue to be the most neglected and backward section of the society.

Table 4.47
Poverty among tribes in Kerala

District	Total No. of ST Families	ST Families	Percentage of ST Families Below Poverty Line
Kasargod	5,355	2,555	47.71
Kannur	3,635	196	5.39
Wayanad	23,287	14,063	60.39
Kozhikode	1,215	288	23.70
Malappuram	2,363	1,247	52.77
Palakkad	8,610	4,571	53.09
Thrissur	967	430	44.47
Ernakulam	1,212	118	9.74
Idukki	11,516	6,422	55.77
Kottayam	3,999	749	18.73
Alappuzha	651	47	7.22
Pathanamthitta	1,647	722	43.84
Kollam	925	95	10.27
Thiruvananthapuram	4,059	2,161	53.24
Total	69,441	33,664	48.48

Source: Government of Kerala, Third sub plan, (1999-2000)

Table 4.47 explains poverty among tribes in Kerala. From the data it is clear that poverty among tribes is the highest in Wayanad followed by Idukki, Thiruvananthapuram and Palakkad districts i.e. 60.39 per cent, 55.77 per cent, 53.24 per cent and 53.09 per cent respectively.

Table 4.48
Incidence of Poverty among Different Sections in Kerala

Sl.No	Category	Share of BPL	Percentage of total population
1	Schedule caste	19	9.81
2	Schedule Tribes	3	1.14
3	Others	78	89.05

Source: Economic Review, (2001)

The incidence of poverty among scheduled tribes in Kerala is only half of the all India level which suggests that the poverty alleviation measures implemented in the state have been more effective compared to the rest of India (Economic Review, 2011). However, taking cue from table 4.48 when the incidence of poverty is examined at the state level, the situation reveals the vulnerability of the tribal community in the state. The incidence of poverty among the scheduled tribes in Kerala constitutes three per cent of the total BPL population in Kerala, while their total population in the state is only 1.14 per cent. When comparing the incidence of poverty among all sections, we find that the incidence of poverty in ST population is about three times that of the general population.

4.10 Health Status of Tribes in Kerala

Health status of tribes in Kerala can be influenced by a number of factors including health, such as nature of nutrition, spread of communicable and genetic disorder diseases, life expectancy, etc. Economic factors like health expenditure, sector of occupation, women participation in labour force and social factors like marriage and educational factors are significant. The following literature gives a vivid picture of health status of tribes in Kerala.

Tribal population in Kerala is in the vicious clutches of low literacy rates, high infant and child mortality rates, high malnutrition, etc. The situation becomes more sensitive as to the prevalence of sickle cell anemia, a trans-generational genetic disorder, among the tribes (Rajasenan and Nikitha, 2013). Land alienation is considered as the main reason for this pathetic state of affairs.

Nutritional anemia is an acute problem for women in India and more so in the tribal belts, with as high as 68.5% with any form of anaemia. Tribal women have heavy workload and anaemia has a profound effect on their psychological and physical health. Anaemia lowers their resistance to fatigue, affects the working capacity under conditions of stress and increases susceptibility to other diseases. Maternal malnutrition, which is quite common among the tribal women, is also a serious health problem; especially for those having many pregnancies too closely

spaced. It affects the reproductive performance and delivery, which is crucial to an infant's chances of survival and to its subsequent growth and development. (Reddy, 2008)

The status of tribal women is worse in all the social and health indicators. Teenage pregnancy and motherhood point to the higher proportion of women in the age group of 15-19 who started bearing children, among the women from ST (21%) and SC (20%) communities than from OBC (16%) and others (12%). Total fertility rate among the tribes is the highest with 3.12, followed by that of SC and OBC (Reddy, 2008).

Early marriage, successive pregnancies accompanied by low calorie of food intake and inaccessibility, and under-utilization of medical facilities, 'unhygienic' and 'crude' practices of parturition, puerperal infection, anaemia, haemorrhage, obstructed labour and sometimes ruptured uterus lead to high maternal morbidity and mortality rates. 'Maternal depletion' is thus the result of early mating, continuous cycles of pregnancy and lactation. The inadequate diet and uninterrupted overwork lead to cumulative disorders, such as anaemia, general malnutrition, premature aging and early death (Basu, 1990).

Even women in advanced stages of pregnancy were required to work in the agricultural fields or walk great distances to collect fuel and minor forest produce (Dasgupta, 1988). Continuous cultivation leads to less fertile land, limited technology and inputs reduce the quantity and quality of the production. Deforestation reduces their food availability and has serious implications, particularly for those women who are responsible for the provision and distribution of food, in times of shortage; they even deprive themselves of food in order to feed others (Ali, 1980; Reddy, 2007).

Reproductive health has been mostly viewed through the lens of morbidity (Reddamma, Reddy, & Rani, 2002), fertility (Mohanty, 2003), mortality of mother and children (Baruah, 2003; Pati, 2003), and, health and hygiene practice (Biswas &

Kapoor, 2005; Chowdhuri, 2005; Dash, 1986; Kshatriya & Basu, 2005; Pandey, 2002; Pati, 2002).

Economic factors which influence the reproductive health status of women are classified as, (i) women's participation in labour force, (ii) family structure or household size, (iii) sector of occupation, (iv) life expectancy, (v) self-perceived health condition and (vi) access to institutional support. Participation in workforce provides women with income and earning opportunity, which can influence their reproductive health by empowering them to have control over reproductive decision (Nag, 1975). Tribals' perception in regard to their health status in general is 'not very good' (Roy Burman, 1986) which, from the tribals' point of view, resulted from lack of access to nutrition and healthcare (Roy Burman, 1986; Mohanty, 2002). Because of the strong association between 'being well' and increased capability of an individual, self – perceived health condition is an economic factor related to reproductive health.

Several social factors related to tribal women's reproductive health, such as marriage practice (Chakravarty et al., 2005), social status of women (Mann, 1996; Sikdar, 2009), and health and hygiene practice (Ali, 1994; Chaudhuri, 1994). Tribal marriage customs like endogamy, exogamy, consanguineous patterns (Basu, 1995) and cross cousin marriage adversely affect their health. Age of marriage directly influences the reproductive health of tribal women by determining the age at entry to sexual union which is a strong determinant of fertility. Marriage at a young age increases the risk of abortions, miscarriages, maternal mortality and still-births (Basu, 1995).

Other notable factors which influence reproductive health status of tribal women are education, social system of gender hierarchy, status of women, religion and caste system, health and hygiene practices, ecological factors, environmental factors, food and nutrition (Basu, 1993). All these pointed out lower health status of tribes in Kerala.

There actually exists a perception –reality gap in the health status of tribes (Rajasenana et al., 2013). 88.26 per cent of tribal communities visit government health centres during periods of illness. The major reason behind opting for Primary Health Centre is their financial incapability. However additional expenses like travel and other incidental expenses are hindering them from accessing government health services located far away from their settlement. In Wayanad district 77.4 per cent of the tribes have the perception that their health status falls in the moderate category. Only 15.2 per cent of the tribes identify themselves as owners of good health (Rajasenana and Abraham, 2013).

Medical institutions used by tribes in Kerala (KILA survey report, 2008) show that 88.26 per cent of tribal community depend upon government hospitals for their treatment. 10.36 per cent depend upon private hospitals and only 1.48 per cent depend upon other facilities. Availability of medical facilities among tribal hamlets of Kerala shows that 72.95 per cent of tribal hamlets have primary health centre facilities, 26.59 per cent hamlets have allopathic hospitals, 19.16 per cent hamlets have Ayurveda dispensary. Followed by this hamlets also have Ayurveda hospitals, allopathic dispensary, hereditary treatment facility, mother and child welfare centre, homeo dispensary, hamlets having a physician well versed in hereditary treatment, mobile dispensary, homeo hospital and their respective share in the hamlets is 14.66 per cent, 14.56 per cent, 13.50 per cent, 12.83 per cent, 10.21 per cent, 9.45 per cent and 9.24 per cent respectively (KILA survey report, 2008)

Communicable diseases and genetic disorders are more prevalent in tribal areas. Communicable diseases still appear as huge burden and non -communicable diseases are on the increase despite the poor low nutritional status and higher physical activity in their communities (Friedman and Somani, 2002). Varied relationship between morbidity and health status among people in Kerala is a fact (Navaneetham et al., 2009).

Based on the data regarding different types of illness suffered by tribes in Kerala (KILA, 2008), tribal morbidity can be classified into five categories. Physical illness is one of the major morbidities suffered by tribes in Kerala and it has occurred to 14036 tribes of 12030 households. Physical illnesses are reported the highest in Wayanad, followed by Kasargod, Idukki and Palakkad districts. In Wayanad district, physical illness is reported among 3971 tribes of 3474 households. In Kasargod district, it is reported among 3296 tribes of 2726 households, Idukki district the same illness is reported among 1481 tribes of 1233 households. . In the Palakkad district physical illness is reported among 739 tribes of 684 households.

Permanent illness is suffered by 40323 tribes in 32572 households. A majority of tribes in Kerala have suffered from this illness, It is reported the highest in Wayanad followed by Kasargod, Palakkad and Idukki districts in Kerala. In Wayanad district, it is reported among 12220 tribes of 10217 households . In Kasargode it is reported among 6160 tribes of 4878 households. In Palakkad district, the same illness is reported among 4890 tribes of 3677 households (KILA survey report ,2008).

Among the 2293 tribal households, 2386 tribes are affected by mental disorder. It is reported the highest in Wayanad followed by Palakkad, Kasargod and Idukki districts. In Wayanad 742 tribes in 717 households suffered from mental disorder, in Palakkad it is reported among 419 tribes of 400 households, in Kasargod 267 tribes of 253 households and in Idukki it is 221 tribes of 215 households. Another notable feature is that 3133 tribes from 2731 tribal households suffered from more than one illness. Other types of illness are reported by 4489 tribes from 3983 tribal households. It is reported the highest in Palakkad at 1181 tribes of 1006 tribal households, followed by Wayanad 921 tribes of 837 tribal households. In Kasargod other types of illness are reported by 632 tribes of 566 households and in Idukki it is 448 tribes of 348 households.

Uses of medical facility by tribals show that highest percentage of government institutions are used by Wayanad district at 40.11 per cent followed by Palakkad, Kasargod and Idukki. In the case of private institutions, 21.16 per cent of them are used in Kannur district, followed by Idukki 18.67 per cent, Wayanad 13.29 per cent and Palakkad 11.76 per cent.

Government institutions available within the tribal hamlets are classified as allopathic, ayurveda, homeo, mobile dispensary, mother and child health centre and other medical institutions. Allopathic medical institutions are classified into three categories as primary health centre, dispensary and hospitals. Ayurveda and homeo institutions are classified as dispensary and hospitals. Tribes in Wayanad district have used the largest services of primary health centres, allopathic dispensary and hospitals in Kerala, the lowest of primary health centre and allopathic dispensary are used by Alappuzha district and lowest services of allopathic hospital are used by Kollam and Pathanamthitta, followed by Alappuzha district. The number of total primary health centre, allopathic dispensary and allopathic hospitals services available among tribes in Kerala is 3388, 676 and 1235 respectively.

The highest number of ayurveda dispensary and hospital services are received by Wayanad district and the lowest by Alappuzha district. Their total services available among tribes in Kerala are 890 and 681 respectively. Homeo dispensary and hospital services are used the largest in Wayanad district and the lowest homeo dispensary services are used in Kollam and homeo hospital services are used by Alappuzha district. Their total services available among tribes in Kerala are 54 and 429 respectively. Mobile dispensary, mother and child healthcare centre and other services are also used the largest number by Wayanad district. Mobile dispensary services are used the lowest by Ernakulum and Thrissur districts. Other services are used by Kozhikode, Malappuram, Thrissur and Thiruvananthapuram. Total contribution of their services in Kerala is 439,596 and 71 respectively (KILA survey report, 2008).

There are 627 tribal hamlets depending upon traditional hereditary treatment. The largest contribution of it is made by Wayanad districts, followed by Kasargod, Palakkad and Idukki districts. Physicians practising these treatments are largely available in Wayanad, followed by Kasargod, Palakkad and Idukki districts. Physicians living closer to tribal hamlet are also reported the highest from Wayanad, Kasargod, Palakkad and Idukki districts in Kerala. Kollam district are far behind in all these factors. Alappuzha district has no tribal hamlets using traditional hereditary treatment and related factors in Kerala (KILA survey report ,2008).

Another reason for good health is nutrition and it is for every individual. The tribes' food consumption is related with the nature of occupation. The majority of households take food twice or thrice a day. Only four per cent of the tribal population get adequate food every day. Roughly 10 per cent of the households with full time employment either in government, semi-government or private institutions are known to get adequate amount of food (Rajasenan and Rajeev, 2013). They pointed out that there exists a link between occupation and nutritional attainments of the household. Farming and agricultural labourers in Wayanad are mostly malnourished. In Palakkad, the reverse is true .The tribes working as labourers in the modern sector and those working under the employment guarantee scheme are the most malnourished. The study also explained that unemployment seems to be the most critical factor that results in food and nutritional insecurity among the tribes in Wayanad. Chi-square result of district wise occupation of the households and nutritional deficiency also shows significant difference among the three districts in terms of malnutrition.(Rajasenan and Rajeev ,2013).

Table 4.49
Employment status and food consumption among tribes in Kerala

Sl No	Employment	Daily food consumption					Total
		Once	Twice	Thrice	At any time	Others	
1	Collection of forest resources	174	762	679	47	0	1662
2	Agriculture	121	3271	5878	508	1	9779
3	Production of traditional items	17	151	166	2	1	337
4	Animal husbandry	16	333	389	9	0	747
5	Small scale trading	0	38	126	11	0	175
6	Collection of herbal medicine	38	146	129	5	0	318
7	Agriculture labourers	1354	22506	34862	1865	2	60589
8	Forest labourers	81	1625	3564	169	0	5439
9	100 days job	41	942	1152	27	0	2162
10	Non- agricultural labourers	224	2456	7586	440	0	10706
11	Estate labourers	7	171	324	28	0	530
12	Govt / Semi Govt job	29	412	3746	735	0	4922
13	Permanent job in private sector	4	72	390	64	0	530
14	Permanent job in forest area	0	22	53	5	0	80
15	Permanent job in estate area	3	32	200	5	0	240
16	Others	58	306	556	73	2	995
17	Not employed	235	847	585	30	4	1701
	Total	2402	34092	60385	4023	10	100912

Source: KILA survey report, (2008)

Table 4.49 shows the food consumption of tribes in Kerala, daily food consumption of tribes is categorised into five on the basis of their daily food intake. They are once in a day, twice in a day, thrice in a day, at any time and others. Tribes in Kerala are engaged in sixteen categories of employment. Among them a majority of tribes worked as agricultural labourers and they are reported as 60589. Of these tribes, 1354 of them can consume food only once a day, 22506 tribes can consume

food twice a day, 34862 tribes can consume food thrice a day. Only 1865 agricultural labourers can consume their food items at any time. Only two of them are included in other categories. Non-agriculture labourers included 10706, among whom 224 tribes consumption is once in a day, 2456 tribes can consume food twice, 7586 tribes can consume thrice in a day. Only 440 tribes can consume their food at any time. 9779 tribes are engaged in agriculture for their income, of them 121 tribes consume once in a day, 3271 tribes consume twice in a day, 5878 tribes can consume thrice in a day, 508 tribes can consume their food at any time. Forest labourers are another group in which there are 5439 tribes working as forest labourers. 81 tribes can consume food only once a day, 1625 tribes can consume twice and 3564 tribes can consume thrice a day, Only 169 tribes can consume at any time.

From the data we can infer that a good number of tribes who are engaged in this sixteen categories of works have limited their food to once or twice in a day.

Table 4.50
Showing Malnutrition and Employment

Sl No	Districts	Collectio n of Forest resources	Agriculture	Producti on of tradition al items	Animal husbandry	Small scale tradi ng	Collectio n of herbal medicine	Agriculture labourers	Forest labour ers	100 days job	Non- agricultural labourers
1	Thiruvananthapuram	0	45	3	0	3	0	30	52	0	9
2	Kollam	10	1	2	2	0	0	4	19	0	6
3	Pathanamthitta	34	21	1	0	0	1	39	54	1	194
4	Alappuzha	0	2	3	0	0	30	3	0	0	101
5	Kottayam	1	9	0	1	1	1	4	2	1	49
6	Idukki	63	707	11	5	3	1	744	161	53	93
7	Ernakulum	23	6	5	0	0	2	5	5	0	21
8	Trissur	28	1	0	1	0	26	24	22	0	31
9	Palakkad	211	265	10	72	1	15	950	205	152	156
10	Malappuram	61	8	0	0	0	22	305	37	1	199
11	Kozhikode	1	4	2	1	2	1	292	12	1	35
12	Wayanad	31	115	6	14	1	4	5104	78	146	50
13	Kannur	2	64	2	1	4	2	715	14	4	99
14	Kasargod	0	7	42	1	1	0	554	11	5	120
	Total	465	1255	87	98	16	105	8773	672	364	1163

Source: KILA survey report, (2008)

There are sixteen types of employment engaged in by tribes in Kerala. Table 4.50 and 4.51 shows the data of malnutrition of tribes and their employment in fourteen districts in Kerala. Collection of forest resources and malnutrition among tribes show that malnutrition is reported the highest in Palakkad at 211, followed by Idukki 63, Pathanamthitta 34 and Wayanad district at 31. Their total contribution in Kerala is 465. Kasargod, Alappuzha and Thiruvananthapuram have not reported malnutrition in some areas. Malnutrition among agriculturist tribes shows that it is reported the highest from Idukki at 707 followed by Palakkad at 265 and Wayanad districts at 115 altogether 1255 are reported in Kerala from the agriculture sector.

Production of traditional items and nutritional status shows that it is reported the highest in Kasargod at 42, followed by Idukki 11 and Palakkad 10 and the total reported malnutrition from this sector is 87. Animal husbandry and malnutrition show that it is reported the highest in Palakkad at 72 followed by Wayanad 14 and Idukki 5. Their total is 98. Small scale trading and malnutrition have just a small effect and its highest is reported as 4 in Kannur and a total of 16 all over Kerala. Agricultural labourers and malnutrition shows that it is reported the highest in Wayanad at 5104, followed by Palakkad 950 and Idukki 744 and the total reported malnutrition from this sector is 8773.

Table 4.51
Showing Malnutrition and Employment

Sl No	Districts	Est ate labour ers	Govt/ Semi Govt job	Perma nent job in Private sector	Permane nt job in forest area	Permanent job in Estate area	Others	Not employed	Total
1	Thiruvanantha puram	0	5	1	0	0	1	19	168
2	Kollam	0	0	0	0	0	2	3	49
3	Pathanamthitta	0	4	0	0	1	9	28	387
4	Alappuzha	0	6	0	0	0	10	15	170
5	Kottayam	0	3	0	0	0	3	13	88
6	Idukki	5	13	2	3	0	12	41	1917
7	Ernakulum	0	0	1	0	0	4	7	79
8	Trissur	1	1	1	0	0	0	10	146
9	Palakkad	6	28	5	3	1	0	124	2204
10	Malappuram	15	2	1	0	2	34	55	742
11	Kozhikode	1	5	1	0	1	37	18	414
12	Wayanad	19	32	4	2	3	0	164	5773
13	Kannur	1	2	2	0	2	28	52	994
14	Kasargod	0	7	3	0	0	27	51	829
	Total	48	108	21	8	10	167	600	13960

Source: KILA survey report, (2008)

Cases of malnutrition among estate labourers is the highest in Wayanad district (19), followed by Malappuram (15) and a total of 48. Government and semi-government jobs and malnutrition shows that it is reported the highest in Wayanad 32, followed by Palakkad 28 and Idukki 13. The total cases of malnutrition reported in Kerala are 108. Permanent job employees in private sector, estate sector and forest sector have the lowest amount of malnutrition and their total number in the district is 21, 8 and 10. Other employment and malnutrition are reported the highest in Kozhikode, Malappuram, and Kannur as 37, 34 and 28 respectively. Malnutrition of not employed people shows that it is reported the highest in Wayanad (164) followed by Palakkad (124) and their total number in the district is reported as 600. Malnutrition and employment status shows that it is reported the highest in Wayanad district (5773), followed by Palakkad district (2204) and Idukki district (1917).

Table 4.52
Details of households where vaccination is received by less than 5 year old children

Sl No	Districts	less than 5 year children Household	full vaccination received children Household	Partially Received vaccination children Household	Not received Vaccination children Household
1	Thiruvananthapuram	651	584	20	30
2	Kollam	329	253	12	56
3	Pathanamthitta	400	359	33	8
4	Alappuzha	159	124	31	4
5	Kottayam	606	509	45	23
6	Idukki	2285	1804	238	150
7	Ernakulum	597	430	101	66
8	Trissur	369	307	18	5
9	Palakkad	3233	2528	544	161
10	Malappuram	1214	912	185	117
11	Kozhikode	691	570	77	44
12	Wayanad	10069	8662	1033	374
13	Kannur	2290	1737	172	137
14	Kasargod	2692	2248	139	108
	Total	25585	21027	2648	1283

Source: KILA survey report, (2008)

Table 4.52 shows the details of vaccination received by less than five year old children. Less than five year children is reported the highest in Wayanad, followed by Palakkad and Idukki and it is reported at 10069, 3233 and 2285 respectively. The lowest number of less than 5 year children is reported from Alappuzha district. Full vaccination received children in Wayanad district are from 8662 households, in Palakkad district it is 2528 households and in Idukki district it is 1804 households. Partially received vaccination households are 1033 in Wayanad, 544 households in Palakkad and 238 households in Idukki district. Vaccination not received children are reported from 374 households in Wayanad, 161 households in Palakkad and 150 households in Idukki district.

4.11 The intensity of the Tribal problems in Attappadi

Basic factors necessary for the development of a society are based on the health and education of the people. Malnutrition among the children in our country is worse than that of some African countries. As far as children are concerned, the right to nutrition is their primary and natural right (Haseena, 2015).

The CAG report of 2012 says that 29% children below the age of three years are malnourished in Kerala. During 2013, the situation in Attappadi was bleak. The government is unable to meet the basic needs of a population of 30,460. A simple temporary relief measure of medicines and food will do little to help the people of Attappadi escape their grim conditions caused by disease and hunger (Haseena, 2015).

Attappadi gained public attention because of the deaths of infants due to malnutrition/hunger in 2013; once again, it comes under a cloud, owing to the deaths of children that continued in 2014 as well. Data up to 31st December 2014 reveals the death of 22 children (13 as per government statistics) and the death of 37 infants during pregnancy. In 2013, 47 deaths of infants were reported from Attappadi and worth Rs. 400 crore were announced by the Union as well as the State governments.

Moreover, the three-tier Panchayati Raj system set apart Rs.1.26 crore to eradicate malnutrition. But the reality is that one third of it remains mere announcements on paper. As per survey of 2011, the tribal population of Kerala is 4, 26,208. The population of Attappadi, an important tribal area, in 2011 was 30460 (44%). The tribal communities, like Irula, Muduga and Kurumba also live in Attappadi. Of these, Kurumbas belong to ancient tribal communities. There are about 10,000 families in 192 tribal hamlets of the Western Ghats mountain ranges. The continued death of infants in Attappadi is an unfortunate testimony to this.

Generations ago, tribes were the only natives of Attappadi. They farmed and consumed diverse foods which included 69 different navadhanyas, 60 types of leafy vegetables like *keera*, *paali*, *munne*, *chakkara*, *tav*, forest fruits like *julee*, *jaleel* and

pali and honey from the like of small, large and kola honey bees and the rich fish property of Bhavani and Shiruvani rivers (Haseena, 2015).

The older generation testified earlier that they never had disease or the death of infants. Historical documents prove that immigration in Attappadi started after 1940. When the Attappadi Tribal Development Block came into existence in 1962, 90.32% of the population consisted of tribes (as per 1951 census). But when the Tribal Block came into existence, various kinds of infrastructural facilities were provided in this area, but none of these facilities benefited tribes, and resulted in large scale immigration to the area.

Most of the immigration to Attappadi was between 1960s and 1980s. Immigrants were from various parts of Kerala as well as from the states of Tamil Nadu and Karnataka. As a result of it, tribes lost their land and many of the forest laws before and after independence took away the tribals' right to land.

Mortality among infants and children due to malnutrition is prevalent in Attappadi region. The UNICEF Report (2013) observed that a total of 39 deaths had been reported from Attappadi tribal block in Palakkad district between April 2012 and May 2013. Major causes included asphyxia, acute respiratory distress syndrome, aspiration, apnoea, preterm and low birth weight, development growth delay, and intra uterine growth retardation (IUGR).

4.11.1 Incidence and Intensity of Health and Nutritional Problems in Attappadi

During 1951, 90 per cent of tribal population was reported in Attappadi block panchayat and it declined to 40.9 per cent in 2001. As per WHO growth standard, 36.9 per cent of malnourished and 0.8 per cent of severely malnourished children are reported from Kerala (The Hindu, 2013). The situation of malnutrition and related health problems is abysmal among socially vulnerable groups in the state of Kerala (Haseena, 2015).

K.Venugopal, the district medical officer (2013) said that 412 cases of anaemia and 67 cases of malnutrition had been noticed by the Health Department. The Integrated Tribal Development Programme conducted a survey between 11 April 2013 and 19 April 2013 in Attappadi, covering 7,565 households and a population of 23,599, and found that the number of tribal people with anaemia/malnutrition was 463/69, the number of children aged below five with anaemia/ malnutrition was 68/57 and lactating mothers with anaemia and malnutrition was 62/ 0.

The UNICEF Report (2013) observed that weight of the mothers at delivery ranged between 39 and 45 kgs. The Ekbal Committee (2013) said that most women had undergone abortion more than once and almost all children examined suffered from anaemia and malnutrition. Difference between the nutritional status of Kerala's general rural population and that of Attappadi could be as high as 50% (Suchitra, 2013). Considering these dismal statistics, Attappadi can be called Kerala's "sub-Saharan Africa (Haseena, 2015).

4.11.2 Causes of Malnutrition Deaths

The death toll of infants due to malnutrition and related health problems rose between January and December 2013. 52 infant deaths were reported from Attappadi in the past 17 months ("The death toll of infants", 2013).

The survey of literature on malnutrition and related health problems in Attappadi points out several reasons for extreme poverty and malnutrition deaths in the region. The most pertinent among them are as follows: land alienation of the tribes, loss of traditional shifting cultivation, loss of traditional food items such as *ragi*, *chama*, *cholam*, *veraku*, *thina*, *thuvvara*, honey, tubes, roots, medicinal vegetables, etc., neglect of the tribes and inaction by the Departments of Tribal and Social Welfare and Health, failure of Public Distribution System and poor performance of Mahatma Gandhi National Rural Employment Guarantee Scheme

(MGNREGS). Contrary to the practices in other places, the anganwadis do not distribute eggs, milk, and bananas among tribal children; lack of essential drug supplies such as Mesoprestol and Magsulf for delivery and childbirth related medical emergencies; disempowerment of the tribe communities, failure of Attappadi Hill Area Development Society (AHADS), a Japanese funded project, which works towards ensuring a sustainable livelihood and ecology; and institutional delays and inefficiency in implementing the laws, schemes and projects meant for tribal groups in Attappadi. There are 4644 tribal hamlets reported from Kerala and the numbers of anganwadis within the tribal hamlets are 1448 and 2705 anganwadi are situated closer to tribal hamlets (KILA survey report, 2008).

The entire literature above brings out the backwardness of tribes in Kerala. We can observe, inter-tribe disparities and interregional disparities among the variables, like land holdings, employment, education, health and nutritional status and housing condition of tribes in Kerala. An exceptional situation is better sanitation facility, as most of tribes in Kerala do not enjoy this facility. i.e. Inter-tribe and inter-community differences are negligible in this variable. These entire variable put together constitute dependent variable that is poverty and morbidity. Studies pointed out the extent of poverty and morbidity which is different among tribe communities in Kerala. The basic reason for poverty and morbidity is same in different regions, but its intensity is different in each tribal community which depends upon other important factors.

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SOCIO ECONOMIC CONDITIONS OF TRIBALS

To study the interrelation between poverty and morbidity patterns, it is essential to have an overview of the socio economic profile of the sample households. The study area comprises tribal pockets in the different districts and their socio economic status is likely to be different. Hence the socio economic status is essential for the backdrop of study. The details are given in table 5.1

5.1 Demographic Particulars

Table 5.1
Age structure

Tribal communities	Age of the Member					Total
	Up to 15 Years	16 - 30 Years	31 - 45 Years	46 - 60 Years	61 - 75 Years	
Wayanad	333 (45.9)	124 (17.1)	175 (24.1)	90 (12.4)	3 (0.4)	725 (100.0)
Adiya	113 (15.6)	42 (5.8)	62 (8.6)	28 (3.9)	0 (0.0)	245 (33.8)
Kattunaikyan	96 (13.2)	41 (5.7)	46 (6.3)	28 (3.9)	0 (0.0)	211 (29.1)
Paniya	48 (6.6)	25 (3.4)	23 (3.2)	13 (1.8)	1 (0.1)	110 (15.2)
Kurichyar	39 (5.4)	11 (1.5)	22 (3.0)	6 (0.8)	2 (0.3)	80 (11.0)
Uralikurumar	37 (5.1)	5 (0.7)	22 (3.0)	15 (2.1)	0 (0.0)	79 (10.9)
Idukki	345 (46.1)	102 (13.6)	204 (27.3)	62 (8.3)	35 (4.7)	748 (100.0)
Mannan	140 (18.7)	43 (5.7)	87 (11.6)	16 (2.1)	24 (3.2)	310 (41.4)
Muthuvan	143 (19.1)	50 (6.7)	76 (10.2)	35 (4.7)	10 (1.3)	314 (42.0)
Malayarayan christian	62 (8.3)	9 (1.2)	41 (5.5)	11 (1.5)	1 (0.1)	124 (16.6)
Palakkad	300 (42.9)	97 (13.9)	173 (24.7)	104 (14.9)	25 (3.6)	699 (100.0)
Irular	242 (34.6)	81 (11.6)	142 (20.3)	92 (13.2)	23 (3.3)	580 (83.0)
Mudugar	58 (8.3)	16 (2.3)	31 (4.4)	12 (1.7)	2 (0.3)	119 (17.0)

Source: Primary data

To study the age structure of tribes, age is classified into five groups, such as up to 15 years, 16 to 30 years, 31-45 years, 46-60 years, and 61-75 years. Age distribution of tribes in three districts shows that the highest per cent is reported up to be 15 years, 45.9 per cent in Wayanad, 46.1 per cent in Idukki, 42.9 per cent in Palakkad and the lowest per cent is reported as 61-75 years. Age distribution of tribes in Kerala shows that dependent population is very large in the state, these groups do not contribute to income of their families, leading to poverty and miserable conditions in their lives.

Table 5.2
Gender

Tribal communities	Gender of the Member		Total
	Male	Female	
Wayanad	322 (44.4)	403 (55.6)	725 (100.0)
Adiya	101 (13.9)	144 (19.9)	245 (33.8)
Kattunaikyan	96 (13.2)	115 (15.9)	211 (29.1)
Paniya	46 (6.3)	64 (8.8)	110 (15.2)
Kurichyar	40 (5.5)	40 (5.5)	80 (11.0)
Uralikurumar	39 (5.4)	40 (5.5)	79 (10.9)
Idukki	336 (44.9)	412 (55.1)	748 (100.0)
Mannan	150 (20.1)	160 (21.4)	310 (41.4)
Muthuvan	117 (15.6)	197 (26.3)	314 (42.0)
Malayarayan Christian	69 (9.2)	55 (7.4)	124 (16.6)
Palakkad	349 (49.9)	350 (50.1)	699 (100.0)
Irular	285 (40.8)	295 (42.2)	580 (83.0)
Mudugar	64 (9.2)	55 (7.9)	119 (17.0)

Source: Primary data

The data shows that more than 50 per cent are females in all 55.6 per cent in Wayanad, 55.1 per cent in Idukki and 50.1 per cent in Palakkad district.

Table 5.3
Marital status.

Tribal communities	Marital Status				Total
	Married	Unmarried	Widow / Widower	Divorced / Separated	
Wayanad	331 (45.7)	340 (46.9)	29 (4.0)	25 (3.4)	725 (100.0)
Adiya	96 (13.2)	114 (15.7)	15 (2.1)	20 (2.8)	245 (33.8)
Kattunaikyan	102 (14.1)	97 (13.4)	10 (1.4)	2 (0.3)	211 (29.1)
Paniya	52 (7.2)	51 (7.0)	4 (0.6)	3 (0.4)	110 (15.2)
Kurichyar	40 (5.5)	40 (5.5)	0 (0.0)	0 (0.0)	80 (11.0)
Uralikurumar	41 (5.7)	38 (5.2)	0 (0.0)	0 (0.0)	79 (10.9)
Idukki	315 (42.1)	360 (48.1)	59 (7.9)	14 (1.9)	748 (100.0)
Mannan	124 (16.6)	145 (19.4)	36 (4.8)	5 (0.7)	310 (41.4)
Muthuvan	139 (18.6)	149 (19.9)	17 (2.3)	9 (1.2)	314 (42.0)
Malayarayan Christian	52 (7.0)	66 (8.8)	6 (0.8)	0 (0.0)	124 (16.6)
Palakkad	324 (46.4)	335 (47.9)	26 (3.7)	14 (2.0)	699 (100.0)
Irular	272 (38.9)	272 (38.9)	22 (3.1)	14 (2.0)	580 (83.0)
Mudugar	52 (7.4)	63 (9.0)	4 (0.6)	0 (0.0)	119 (17.0)

Source: Primary data

The mean age at marriage of Kerala women was 22.2 years in 2001. On the other hand, the age at marriage of females in India is only 19.8 years with considerable rural urban differences (IIPS Macro, 2000). The NFHS- 3 report shows that early marriage is higher among girls (48.9 per cent) than boys (45.5 per cent). Age at which women marry is a status determining variable and fertility behavior. Marriage at an early age is not only detrimental to the couples but also it invites health hazards for the children leading to birth at very early age. This also adversely affects the knowledge about sex, reproduction, pre-natal and post-natal care. Late marriage will reduce the number of children.

Primary data shows that in Wayanad district 45.7 per cent of tribes were married, 46.9 per cent of tribes were unmarried, 4 per cent were widows and

widowers, and remaining 3.4 per cent tribes were divorced or separated. Among five tribes selected from the district, the highest per cent married were reported among Kattunaikyan community. Unmarried, widows and widowers, divorced cases were reported as highest in Adiya community.

In Idukki district 42.1 per cent of tribes were married, 48.1 per cent were unmarried, 7.9 per cent were widows and widowers, only 1.9 per cent were divorced. Among the three tribes selected in the district highest married, unmarried tribes and divorced were reported among the Muthuvan's community, the highest per cent of widows and widowers was reported in Mannans community. In Palakkad district 46.4 per cent tribes were married, 47.9 percent of tribes were unmarried, 3.7 per cent were widows and widowers remaining 2 per cent were divorced. Among the two tribes selected from the district, the highest per cent of married, unmarried, widows and widowers, divorced were reported from Irular community.

Table 5.4
Educational status

Tribal communities	Educational Status				Total
	Illiterate	Primary School	High School	Higher Secondary	
Wayanad	244 (37.3)	322 (49.2)	82 (12.5)	7 (1.0)	655(100.0)
Adiya	79 (12.1)	110 (16.8)	30 (4.6)	0 (0.0)	219(33.5)
Kattunaikyan	94 (14.4)	79 (12.1)	8 (1.2)	0 (0.0)	181(27.7)
Paniya	37 (5.6)	55 (8.4)	11 (1.7)	0 (0.0)	103(15.7)
Kurichyar	8 (1.2)	30 (4.6)	32 (4.9)	7 (1.0)	77(11.7)
Uralikurumar	26 (3.9)	48 (7.3)	1 (0.2)	0 (0.0)	75(11.4)
Idukki	154 (22.5)	413 (60.3)	116 (16.9)	2 (0.3)	685(100.0)
Mannan	70 (10.2)	189 (27.6)	30 (4.4)	0 (0.0)	289(42.2)
Muthuvan	73 (10.7)	164 (23.9)	41 (5.9)	0 (0.0)	278(40.5)
Malayarayan Christian	11 (1.6)	60 (8.8)	45 (6.6)	2 (0.3)	118(17.3)
Palakkad	344 (51.7)	209 (31.4)	96 (14.4)	16 (2.4)	665(100)
Irular	300 (45.1)	162 (24.4)	84 (12.6)	13 (1.9)	559(84.0)
Mudugar	44 (6.6)	47 (7.1)	12 (1.8)	3 (0.5)	106 (16.0)

Source: Primary data

Tribes also engaged their children in household activities from their early childhood. Although government schools are within reach, the cost of education and poverty force them to engage their children as labourers and to earn a little from their childhood. As a result, the tribal children remain uneducated and illiterates. A large number of children drop out of school because of lack of interest and poor support and motivation from families and authorities. Economic pressures also prevent them from continuing their education and they join the labour force early in life. In order to promote the quality of education, the government has introduced special schemes like Sarva Shiksha Abhiyan, Universal Primary Education, etc. Despite all these efforts, a sizable number of Paniya and Kattunaika children do not attend classes and are left with low education levels.

According to the study in Wayanad it was found that 37.3 per cent of tribes were illiterate, 49.2 per cent tribes reported that they had completed primary school education, 12.5 per cent tribes had high school education, and the remaining one per cent reported that they had completed higher secondary education. In Idukki district, 22.5 per cent of tribes were illiterates, 60.3 per cent were primary educated, 16.9 per cent were high school educated and the remaining 0.3 per cent had completed higher secondary education. In Palakkad district 51.7 per cent of tribes were illiterate, 31.4 per cent tribes completed primary education, 14.4 per cent completed high school education and 2.4 per cent tribes reported that they had completed higher secondary education.

Table 5.5
Employment status

Tribal communities	Employment Status					Total
	Unemployed	Agricultural labourers	Agriculture	Skilled labourers	NREGA	
Wayanad	464 (64.0)	224 (30.9)	27 (3.7)	9 (1.2)	1 (0.1)	725 (100.0)
Adiya	152 (21.0)	90 (12.4)	3 (0.4)	0 (0.0)	0 (0.0)	245 (33.8)
Kattunaikyan	139 (19.2)	63 (8.7)	9 (1.2)	0 (0.0)	0 (0.0)	211 (29.1)
Paniya	70 (9.7)	39 (5.4)	1 (0.1)	0 (0.0)	0 (0.0)	110 (15.2)
Kurichyar	50 (6.9)	6 (0.8)	14 (1.9)	9 (1.2)	1 (0.1)	80 (11.0)
Uralikurumar	53 (7.3)	26 (3.6)	0 (0.0)	0 (0.0)	0 (0.0)	79 (10.9)
Idukki	435 (58.2)	207 (27.7)	105 (14.0)	1 (0.1)	0 (0.0)	748 (100.0)
Mannan	182 (24.3)	90 (12.0)	38 (5.1)	0 (0.0)	0 (0.0)	310 (41.4)
Muthuvan	186 (24.9)	89 (11.9)	39 (5.2)	0 (0.0)	0 (0.0)	314 (42.0)
Malayarayan Christian	67 (9.0)	28 (3.7)	28 (3.7)	1 (0.1)	0 (0.0)	124 (16.6)
Palakkad	403 (57.7)	192 (27.5)	48 (6.9)	0 (0.0)	55 (7.9)	699 (100.0)
Irular	331 (47.4)	176 (25.2)	19 (2.7)	0 (0.0)	53 (7.6)	580 (83.0)
Mudugar	72 (10.3)	16 (2.3)	29 (4.1)	0 (0.0)	2 (0.3)	119 (17.0)

Source: Primary data

Employment plays a vital role in determining the socio-economic status of a household. It is an index to measure the standard of living of an individual and his family and has an important linkage with the health status and health service utilization.

In Wayanad district 30.9 per cent of tribes are agricultural labourers, 3.7 per cent tribes are agricultures, 1.2 per cent of tribes are skilled labourers, 64 per cent tribes have no employment, 0.1 per cent are engaged in NREGA. In the case of Idukki district, 27.7 per cent of tribes are agricultural labourers, 14 per cent of tribes are agriculturists, 58.2 per cent have no employment and 0.1 per cent are skilled labourers. In Palakkad district, 27.5 per cent of tribes are agricultural labourers, 6.9 per cent are agriculturists, 57.7 per cent of tribes have no employment, 7.9 per cent of tribes are engaged in NREGA.

Table 5.6
Monthly income of family

Tribal communities	Below Rs 2000	Rs 2000-Rs 4000	Rs 4000 and above	Total
Wayanad	47(31.3)	87(58.0)	16(10.7)	150(100.0)
Adiya	17(11.3)	37(24.7)	0(0.0)	54(36.0)
Kattunaikyan	11(7.3)	31(20.7)	0(0.0)	42(28.0)
Paniya	19(12.7)	4(2.6)	0(0.0)	23(15.3)
Kurichyar	0(0.0)	0(0.0)	16(10.7)	16(10.7)
Uralikurumar	0(0.0)	15(10.0)	0(0.0)	15(10.0)
Idukki	74(49.3)	62(41.4)	14(9.3)	150 (100.0)
Mannan	40(26.7)	24(16.0)	0(0.0)	64 (42.7)
Muthuvan	34(22.6)	25(16.7)	0(0.0)	59 (39.3)
Malayarayan Christain	0(0.0)	13(8.7)	14(9.3)	27 (18.0)
Palakkad	122(81.4)	26(17.3)	2(1.3)	150 (100.0)
Irular	112(74.7)	10(6.7)	2(1.3)	124 (82.7)
Mudugar	10(6.7)	16(10.7)	0(0.0)	26 (17.3)

Source: Primary data

Monthly income of Wayanad district shows that 31.3 per cent of tribes' household income is less than Rs.2000. 58 per cent of tribes monthly income ranges between Rs.2000-Rs.4000 and it is only 10.7 per cent of Kurichyar tribes monthly income is Rs.4000 and above. In Idukki district 49.3 per cent of both Mannan and Muthuvans tribes reported that their monthly income is less than Rs.2000. 41.4 per cent of tribes income ranges between Rs.2000-Rs.4000 and it includes tribes like Mannan, Muthuvans and Malayarayan. Only 9.3 per cent of Malayarayan's income is Rs.4000 and above. In Palakkad district 81.3 per cent of tribes monthly family income is below Rs.2000, 17.3 per cent of tribes income ranges between Rs.2000-Rs.4000 and only 1.3 per cent of Irular tribes income is Rs.4000 and above. This shows that except Kurichyar community and Malayarayan community, the rest of the tribal households average monthly income is around Rs.2000. The average monthly income of Kurichyar community is Rs.4000 and that of Malayarayan community is Rs.3037.04. The average monthly income of the district shows as is reported, that it is in Wayanad at Rs.2213.02, followed by Idukki at Rs.2186.17 and Palakkad at Rs.2025.85.

The total expenditure of the tribal households is classified under food expenditure, medical expenditure and other expenditures. The monthly food expenditure shows that most of the household's food expenditure is less than Rs.500. In Wayanad district, 89.3 per cent of tribal household food expenditure is reported as less than Rs.500, 2.7 per cent of Kurichyar tribes monthly food expenditure ranges between Rs.500-Rs.1000, remaining eight per cent of Kurichyar tribes spent monthly food expenditure ranges between Rs.1000-Rs.1500. In Idukki district 52 per cent of tribes' food expenditure is reported as less than Rs.500, 36 per cent of tribal households food expenditure ranges between Rs.500-Rs.1000 and the remaining 12 per cent of Malayarayan tribes food expenditure ranges between Rs.1000-Rs.1500. In Palakkad district 97.3 per cent of tribes' food expenditure is less than Rs.500, 2.7 per cent of Irular tribes monthly food expenditure ranges between Rs.500-Rs.1000.

The highest average monthly food expenditure is reported by Kurichyar community and Malayarayan community as Rs.1375.0 and Rs.1000.0 respectively.

Table 5.7
Amount of monthly medical expenditure

Tribal communities	Amount of monthly medical expenditure in the family					Total
	Below Rs.500	Rs.500 - 1000	Rs.1000 - 1500	Rs.1500 - 2000	Above Rs.2000	
Wayanad	117 (78.0)	4 (2.7)	15 (10.0)	4 (2.6)	10 (6.7)	150 (100.0)
Adiya	44 (29.3)	0 (0.0)	6 (4.0)	2 (1.3)	2 (1.3)	54 (36.0)
Kattunaikyan	29 (19.3)	3 (2.0)	6 (4.0)	2 (1.3)	2 (1.3)	42 (28.0)
Paniya	20 (13.3)	0 (0.0)	2 (1.3)	0 (0.0)	1 (0.7)	23 (15.3)
Kurichyar	12 (8.0)	1 (0.7)	0 (0.0)	0 (0.0)	3 (2.0)	16 (10.7)
Uralikurumar	12 (8.0)	0 (0.0)	1 (0.7)	0 (0.0)	2 (1.3)	15 (10.0)
Idukki	110 (73.3)	0 (0.0)	1 (0.7)	10 (6.7)	29 (19.3)	150 (100.0)
Mannan	55 (36.7)	0 (0.0)	0 (0.0)	1 (0.7)	8 (5.3)	64 (42.7)
Muthuvan	34 (22.6)	0 (0.0)	1 (0.7)	7 (4.7)	17 (11.3)	59 (39.3)
Malayarayan Christian	21 (14.0)	0 (0.0)	0 (0.0)	2 (1.3)	4 (2.7)	27 (18.0)
Palakkad	134 (89.3)	9 (6.0)	7 (4.7)	0 (0.0)	0 (0.0)	150 (100.0)
Irular	108 (72.0)	9 (6.0)	7 (4.7)	0 (0.0)	0 (0.0)	124 (82.7)
Mudugar	26 (17.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	26 (17.3)

Source: Primary data

78 percent of tribes in Wayanad district reported that their households monthly medical expenditure reported is below Rs.500, 10 per cent of tribes reported that their health expenditure ranges between Rs.1000-1500, whereas 6.7 per cent of tribes reported that medical expenditure is above Rs.2000. In the case of Kurichyar, Adiyas, Kattunaikyans, and Uralikurumar their medical expenditure is the highest. This is mainly due to their nature and pattern of diseases. Communicable diseases

like fever, cough, cold, TB, diarrhoea, hepatitis- A, measles, etc are reported from among the Kattunaikyan, Adiya, and Uralikurumar communities. Whereas permanent illness like rheumatoid arthritis, heart disorder, blood pressure, diabetes, etc. are reported from among the Kurichyar, Adiya, Kattunaikyan and Uralikurumar communities. Moreover Kurichyar community and Uralikurumar community depend upon private hospitals for their inpatient treatment.

In Idukki district 73.3 per cent tribes reported that their monthly medical expenditure is less than Rs.500 during the survey period. 19.3 per cent tribes medical expenditure reported is above Rs.2000, 6.7 per cent tribes medical expenditure ranges between Rs.1500-2000 during the period. Only 0.7 per cent tribes reported that they spent Rs.1000-1500. Among the three tribes in the district Muthuvan's community reported the highest medical expenditure. In Palakkad district 89.3 per cent tribes reported that they had spent less than Rs.500 on their monthly medical expenditure, six per cent tribes reported that their medical expenditure ranged between Rs.500-1000 and only 4.7 per cent tribes reported that they spent Rs.1000-1500 during the period. The highest average monthly medical expenditure reported by the Muthuvan community Rs.3432.2, followed by Kurichyar community at Rs.2312.5 and Malayarayan community at Rs.2018.5. The lowest average monthly medical expenditure reported by Mudugar community and Irular community is Rs.500 and Rs.592.7 respectively.

Table 5.8
Other Expenditure in the Family

Tribal communities	Other expenditure in the family				Total
	Below Rs. 500	Rs. 500 – 1000	Rs. 1000 - 1500	Rs. 1500 and above	
Wayanad	2 (1.3)	120 (80.0)	12 (8.0)	16 (10.7)	150 (100.0)
Adiya	0 (0.0)	50 (33.3)	1 (0.7)	3 (2.0)	54 (36.0)
Kattunaikyan	0 (0.0)	40 (26.7)	0 (0.0)	2 (1.3)	42 (28.0)
Paniya	2 (1.3)	16 (10.7)	5 (3.3)	0 (0.0)	23 (15.3)
Kurichyar	0 (0.0)	0 (0.0)	6 (4.0)	10 (6.7)	16 (10.7)
Uralikurumar	0 (0.0)	14 (9.3)	0 (0.0)	1 (0.7)	15 (10.0)
Idukki	0 (0.0)	88 (58.7)	48 (32.0)	14 (9.3)	150 (100.0)
Mannan	0 (0.0)	48 (32.0)	16 (10.7)	0 (0.0)	64 (42.7)
Muthuvan	0 (0.0)	40 (26.7)	19 (12.7)	0 (0.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	0 (0.0)	13 (8.7)	14 (9.3)	27 (18.0)
Palakkad	0 (0.0)	148 (98.7)	0 (0.0)	2 (1.3)	150 (100.0)
Irular	0 (0.0)	123 (82.0)	0 (0.0)	1 (0.7)	124 (82.7)
Mudugar	0 (0.0)	25 (16.7)	0 (0.0)	1 (0.7)	26 (17.3)

Source: Primary data

Other expenditure includes items, such as travel, entertainment, religious ceremonies, alcohol and others. Majority of the family members smoke beedis/cigarettes and chew betel leaf with tobacco and areca nut. Many of the tribes, including some women, are addicted to alcohol. Generally, during the performance of ceremonies, festivals and rituals, sharing of liquors by the community members is common. Moreover, as per their version, alcohol is indispensable to get sound sleep. The major part of the income is being spent on liquor which also adversely affects the health of the tribes. 80 per cent of tribes in Wayanad district other expenditure ranges between Rs.500-1000, tribes like Adiya and Kattunaikyan represent highest percentage followed by Uralikurumars and Paniyas among these groups. 6.7 per cent of Kurichyar community reported that they had spent above Rs.1500 for other

expenditures, eight per cent tribes reported their other expenditure ranged between Rs.1000-1500 and Kurichyar tribe represents the highest per cent among these groups.

In Idukki district, 58.7 per cent of tribes other expenditure ranges from Rs. 500 to Rs.1000. It includes 32 per cent of Mannan community and 26.7 per cent of Muthuvan community. 32 per cent of tribes had their other expenditure between Rs. 1000 and Rs.1500. Among these there are 12.7 per cent of Muthuvan community, 10.7 per cent of Mannan community and 8.7 per cent of Malayarayan community. The highest other expenditure is between Rs. 1500 and above and it is reported from 9.3 per cent of the Malayarayan community. In Palakkad district 98.7 per cent tribes spent between Rs.500-1000 and 1.3 per cent of Irular community spent above Rs.1500.

Table 5.9
Debt in the family

Tribal communities	Debt in the family		Total
	Yes	No	
Wayanad	55 (36.7)	95 (63.3)	150 (100.0)
Adiya	22 (14.7)	32 (21.3)	54 (36.0)
Kattunaikyan	11 (7.3)	31 (20.7)	42 (28.0)
Paniya	20 (13.3)	3 (2.0)	23 (15.3)
Kurichyar	0 (0.0)	16 (10.7)	16 (10.7)
Uralikurumar	2 (1.3)	13 (8.7)	15 (10.0)
Idukki	95 (63.3)	55 (36.7)	150 (100.0)
Mannan	29 (19.3)	35 (23.3)	64 (42.7)
Muthuvan	39 (26.0)	20 (13.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	18 (12.0)	132 (88)	150 (100.0)
Irular	18 (12.0)	106 (70.7)	124 (82.7)
Mudugar	0 (0.0)	26 (17.3)	26 (17.3)

Source: Primary data

Indebtedness is one of the core issues in tribal regions of the state. In Wayanad district 36.7 per cent reported that they were in debt. Adiyas and Paniyas have the highest reported debt. In Idukki district, 63.3 per cent households reported debt while 36.7 per cent households reported no debt. In the district, Mannans, Muthuvans and Malayarayans reported the highest per cent of debt. Compared to other two districts, Idukki district reported the highest per cent of debt among tribes in Kerala. In Palakkad district 12 per cent households reported that their households suffered from debt. Irulars in Palakkad reported the highest per cent of debt in the district.

Table 5.10
Reasons for borrowing

Tribal communities	Reasons for borrowing						Total
	For medical treatment	House construction	House construction & medical expenditure	House construction & agriculture	House construction, medical expenditure & agriculture	Other expenses	
Wayanad	35 (23.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	20 (13.3)	55 (36.7)
Adiya	15 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	7 (4.7)	22 (14.7)
Kattunaikyan	11 (7.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	11 (7.3)
Paniya	7 (4.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	13 (8.7)	20 (13.3)
Kurichyar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Uralikurumar	2 (1.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.3)
Idukki	52 (34.7)	7 (4.7)	4 (2.7)	8 (5.3)	8 (5.3)	16 (10.7)	95 (63.3)
Mannan	16 (10.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	13 (8.7)	29 (19.3)
Muthuvan	36 (24.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (2.0)	39 (26.0)
Malayarayan Christian	0 (0.0)	7 (4.7)	4 (2.7)	8 (5.3)	8 (5.3)	0 (0.0)	27 (18.0)
Palakkad	18 (12.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	18 (12.0)
Irular	18 (12.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	18 (12.0)
Mudugar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Source: Primary data

In Wayanad district, 23.3 per cent tribes reported that their borrowing was due to medical treatment. 13.3 per cent tribes reported that they had borrowed money for meeting other expenditures. Their meeting expenditure encompassed travel, entertainment, religious ceremonies, alcohol and others. Adiyas, Kattunaikyan and Paniyas borrow money for meeting medical expenditure. The highest per cent of other expenditure is met by Paniyas and Adiyas.

34.7 per cent of tribes in Idukki district borrowed money for their medical treatment, among whom 24 per cent are from Muthuvan community and 10.7 per cent from Mannan community. Malayarayan community borrowed funds for various purposes. They include construction of houses 4.7 per cent, 2.7 per cent for both house construction and medical treatment, 5.3 per cent for house construction and agriculture, 5.3 per cent for house construction, medical expenditure and agriculture. 10.7 per cent of tribes in the district borrowed money for other expenses and they are 8.7 per cent from Mannan community and 2 per cent from Muthuvan community. In Palakkad district 12 per cent expenditure is for meeting medical treatment and Irulars have incurred the same expenditure.

Table 5.11
Source of borrowing

Tribal communities	Source of borrowing					Total
	Neighbours	Private Finance	Nationalised Bank	Kudumbashree	Others	
Wayanad	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	55 (36.7)	55 (36.7)
Adiya	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	22 (14.7)	22 (14.7)
Kattunaikyan	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	11 (7.3)	11 (7.3)
Paniya	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	20 (13.3)	20 (13.3)
Kurichyar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Uralikurumar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.3)	2 (1.3)
Idukki	8 (5.3)	23 (15.3)	4 (2.7)	6 (4.0)	54 (36.0)	95 (63.3)
Mannan	0 (0.0)	0 (0.0)	0 (0.0)	6 (4.0)	23 (15.3)	29 (19.3)
Muthuvan	8 (5.3)	0 (0.0)	0 (0.0)	0 (0.0)	31 (20.7)	39 (26.0)
Malayarayan Christian	0 (0.0)	23 (15.3)	4 (2.7)	0 (0.0)	0 (0.0)	27 (18.0)
Palakkad	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	18 (12.0)	18 (12.0)
Irular	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	18 (12.0)	18 (12.0)
Mudugar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Source: Primary data

Sources of borrowing include nationalised banks, neighbours, private finance, kudumbashree and others. Nearly 40 per cent of tribes used other sources to raise funds. Total borrowings in Wayanad district include 36.7 per cent of tribes and they borrowed from other sources, i.e. friends, neighbours, etc. Adiyas, Paniyas and Kattunaikyans are the main tribes who depend upon other sources, Wayanad, 37 per cent, Idukki 36 per cent and Palakkad 12 per cent. In Idukki 15.3 per cent of tribes from Mannan and 20.7 per cent tribes of Muthuvan borrowed fund from other sources. 5.3 per cent of Muthuvan community borrowed from neighbours and 4 per cent Mannan community borrowed from Kudumbashree. Malayarayan community borrowed funds from both private finance and nationalised banks. It is 15.3 per cent

and 2.7 per cent respectively. It indicates that Kudumbashree services are popular among the community, but not efficient.

5.2 Social conditions of tribes

Table 5.12
Ration card ownership

Tribal communities	Household posses ration card		Total
	Yes	No	
Wayanad	140 (93.3)	10 (6.7)	150 (100.0)
Adiya	48 (32.0)	6 (4.0)	54 (36.0)
Kattunaikyan	42 (28.0)	0 (0.0)	42 (28.0)
Paniya	19 (12.7)	4 (2.7)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	15 (10.0)	0 (0.0)	15 (10.0)
Idukki	150 (100.0)	0 (0.0)	150 (100.0)
Mannan	64 (42.7)	0 (0.0)	64 (42.7)
Muthuvan	59 (39.3)	0 (0.0)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	150 (100.0)	0 (0.0)	150 (100.0)
Irular	124 (82.7)	0 (0.0)	124 (82.7)
Mudugar	26 (17.3)	0 (0.0)	26 (17.3)

Source: Primary data

The purpose of the ration card is to help the tribal families to record all the benefits received by them from various tribal development sources, as also serve as their basic demographic document. In Wayanad district, 93.3 per cent of tribal households have ration cards. They include four per cent of Adiyas and 2.7 per cent of Paniyas having no ration card. Almost all tribal households in Idukki and Palakkad districts have BPL ration cards.

Table 5.13
Purchase of items from ration shop

Tribal communities	State items				Total
	Rice, Sugar & Kerosene	Rice Only	Wheat, Rice & Kerosene	Rice, Sugar, Kerosene & Atta	
Wayanad	135 (90.0)	15 (10.0)	0 (0.0)	0 (0.0)	150 (100.0)
Adiya	54 (36.0)	0 (0.0)	0 (0.0)	0 (0.0)	54 (36.0)
Kattunaikyan	42 (28.0)	0 (0.0)	0 (0.0)	0 (0.0)	42 (28.0)
Paniya	23 (15.3)	0 (0.0)	0 (0.0)	0 (0.0)	23 (15.3)
Kurichyar	1 (0.7)	15 (10.0)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	15 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	15 (10.0)
Idukki	75 (50.0)	0 (0.0)	75 (50.0)	0 (0.0)	150 (100.0)
Mannan	41 (27.3)	0 (0.0)	23 (15.3)	0 (0.0)	64 (42.7)
Muthuvan	34 (22.7)	0 (0.0)	25 (16.7)	0 (0.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	0 (0.0)	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	0 (0.0)	0 (0.0)	29 (19.3)	121 (80.7)	150 (100.0)
Irular	0 (0.0)	0 (0.0)	13 (8.7)	111 (74.0)	124 (82.7)
Mudugar	0 (0.0)	0 (0.0)	16 (10.7)	10 (6.7)	26 (17.3)

Source: Primary data

All tribes from Wayanad, Idukki and Palakkad reported that they were purchasing items from ration shops. In the case of Wayanad 90 per cent of tribal households have reported that they are purchasing rice, sugar and kerosene from ration shops and 10 per cent of Kurichyar purchase rice only.

In Idukki district 50 per cent of tribal households purchase rice, sugar and kerosene. They include 27.3 per cent of Mannans and 22.7 per cent of Muthuvans. Remaining 50 per cent households are purchasing wheat, rice and kerosene. 15.3 per

cent of Mannans, 16.7 per cent of Muthuvans and 18 per cent of Malayarayan are included in this group.

In Palakkad district, 19.3 per cent tribal households purchase wheat, rice and kerosene. They include 8.7 per cent of Irular and 10.7 per cent of Mudugar. 80.7 per cent have reported that they are purchasing rice, sugar, kerosene and atta. They include 74 per cent of Irular and 6.7 per cent of Mudugar. All the tribal households in Wayanad, Idukki and Palakkad district have 100 days job support cards. All the adult members in Wayanad, Idukki and Palakkad district have election identity card as well.

Table 5.14
Details of Pension received by the household members

Tribal communities	Pension received by anyone		Total
	Yes	No	
Wayanad	4 (2.7)	146 (97.3)	150 (100.0)
Adiya	2 (1.3)	52 (34.7)	54 (36.0)
Kattunaikyan	1 (0.7)	41 (27.3)	42 (28.0)
Paniya	1 (0.7)	22 (14.7)	23 (15.3)
Kurichyar	0 (0.0)	16 (10.7)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	54 (36.0)	96 (64.0)	150 (100.0)
Mannan	37 (24.7)	27 (18.0)	64 (42.7)
Muthuvan	17 (11.3)	42 (28.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	27 (18.0)	27 (18.0)
Palakkad	5 (3.3)	145 (96.7)	150 (100.0)
Irular	5 (3.3)	119 (79.3)	124 (82.7)
Mudugar	0 (0.0)	26 (17.3)	26 (17.3)

Source: Primary data

Only 2.7 per cent of tribes in Wayanad district get pension. 1.3 per cent of Adiyas, 0.7 per cent of Kattunaikyans and 0.7 per cent of Paniyas are getting old age pension. This is a very limited number. 36 per cent of tribal households in Idukki district get pension. This include 12.7 per cent of Mannans and six per cent of Muthuvans, are getting old age pension, 12 per cent of Mannans and 5.3 per cent of Muthuvans are getting widow pension. Remaining 64 per cent has no pension, only 3.3 per cent in Palakkad district get pension and these include 1.3 per cent of Irular tribes getting old age pension.

It is to be noted that all the tribal households in Wayanad, Idukki and Palakkad reported that they were not members of any cooperative credit society.

Table 5.15
Kudumbashree activities

Tribal communities	Household related to any Kudumbashree services		Total
	Yes	No	
Wayanad	91 (60.7)	59 (39.3)	150 (100.0)
Adiya	42 (28.0)	12 (8.0)	54 (36.0)
Kattunaikyan	13 (8.7)	29 (19.3)	42 (28.0)
Paniya	11 (7.3)	12 (8.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	9 (6.0)	6 (4.0)	15 (10.0)
Idukki	150 (100.0)	0 (0.0)	150 (100.0)
Mannan	64 (42.7)	0 (0.0)	64 (42.7)
Muthuvan	59 (39.3)	0 (0.0)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	105 (70.0)	45 (30.0)	150 (100.0)
Irular	79 (52.7)	45 (30.0)	124 (82.7)
Mudugar	26 (17.3)	0 (0.0)	26 (17.3)

Source: Primary data

More than sixty per cent of tribes in Wayanad district households are related with Kudumbashree activities. They comprise 28 per cent of Adiyas, 10.7 per cent of Kurichyar, 8.7 per cent of Kattunaikyan, 7.3 per cent of Paniyas and 6 per cent of Uralikurumars. In Idukki all the tribe households are related with Kudumbashree services. 42.7 per cent of Mannans, 39.3 per cent of Muthuvans and 18 per cent of Malayarayan households are engaged in Kudumbashree services. In Palakkad 70 per cent are related with kudumbashree. 52.7 per cent of Irular and 17.3 per cent of Mudugars are engaged in this service.

All the tribes in Wayanad, Idukki and Palakkad reported that they were not facing any cruelty from others. But they are faced with attacks from wild animals and houses, agriculture and settlement are destroyed. Such episodes arise as a social problem.

5.3 Details of Land and Assets

Table 5.16
Land ownership

Tribal communities	Land owning members		Total
	Yes	No	
Wayanad	121 (80.7)	29 (19.3)	150 (100.0)
Adiya	52 (34.7)	2 (1.3)	54 (36.0)
Kattunaikyan	15 (10.0)	27 (18.0)	42 (28.0)
Paniya	23 (15.3)	0 (0.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	15 (10.0)	0 (0.0)	15 (10.0)
Idukki	84 (56.0)	66 (44.0)	150 (100.0)
Mannan	32 (21.3)	32 (21.3)	64 (42.7)
Muthuvan	25 (16.7)	34 (22.7)	59 (39.3)
Malayarayan christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	138 (92.0)	12 (8.0)	150 (100.0)
Irular	112 (74.7)	12 (8.0)	124 (82.7)
Mudugar	26 (17.3)	0 (0.0)	26 (17.3)

Source: Primary data

In Wayanad district 80.7 per cent reported that they enjoyed land ownership. 34.7 per cent of Adiyas, 15.3 per cent of Paniyas, 10 per cent of Kattunaikyans and Uralikurumars, 10.7 per cent of Kurichyars are included in it. Remaining 19.3 per cent reported that they had no land ownership. In Idukki district 56 per cent of tribes have land ownership. 21.3 per cent of Mannans, 18 per cent of Malayarayans, 16.7 per cent of Muthuvans own land. Remaining 44 per cent have no land ownership. In Palakkad, 92 per cent have land ownership and eight per cent have no land ownership, but their land is not registered in their own name. Most of them have single pattayam and it is registered commonly in the name of tribal colony settlement.

Table 5.17
Size of owner ship land (in cents)

Tribal communities	Size of Holding					Total
	No Land	< 5 Cent	5 - 10 Cent	10 - 50 Cent	> 50 Cent	
Wayanad	29 (19.3)	8 (5.4)	97 (64.7)	13 (8.6)	3 (2.0)	150 (100.0)
Adiya	2 (1.3)	7 (4.7)	45 (30.0)	0 (0.0)	0 (0.0)	54 (36.0)
Kattunaikyan	27 (18.0)	0 (0.0)	9 (6.0)	5 (3.3)	1 (0.7)	42 (28.0)
Paniya	0 (0.0)	0 (0.0)	22 (14.7)	1 (0.7)	0 (0.0)	23 (15.3)
Kurichyar	0 (0.0)	1 (0.7)	8 (5.3)	5 (3.3)	2 (1.3)	16 (10.7)
Uralikurumar	0 (0.0)	0 (0.0)	13 (8.7)	2 (1.3)	0 (0.0)	15 (10.0)
Idukki	66 (44.0)	0 (0.0)	28 (18.6)	31 (20.7)	25 (16.7)	150 (100.0)
Mannan	32 (21.3)	0 (0.0)	9 (6.0)	13 (8.7)	10 (6.7)	64 (42.7)
Muthuvan	34 (22.7)	0 (0.0)	8 (5.3)	10 (6.7)	7 (4.7)	59 (39.3)
Malayarayan Christian	0 (0.0)	0 (0.0)	11 (7.3)	8 (5.3)	8 (5.3)	27 (18.0)
Palakkad	12 (8.0)	69 (46.0)	35 (23.3)	24 (16.0)	10 (6.7)	150 (100.0)
Irular	12 (8.0)	69 (46.0)	26 (17.3)	11 (7.3)	6 (4.0)	124 (82.7)
Mudugar	0 (0.0)	0 (0.0)	9 (6.0)	13 (8.7)	4 (2.7)	26 (17.3)

Source: Primary data

In Wayanad district, 5.4 per cent have less than five cents of land. It includes tribes such as 4.7 per cent of Adiyas and 0.7 per cent of Kurichyar. 64.7 per cent have 5-10 cents of land, 30 per cent of Adiyas, 14.7 per cent of Paniyas, 8.7 per cent of Uralikurumars, six percent of Kattunaikyans and 5.3 per cent of Kurichyars are included in the study. 8.6 per cent tribes have 10-50 cents of land, 3.3 per cent of Kattunaikyans and Kurichyar, 1.3 per cent of Uralikurumar and 0.7 per cent of Paniyas are included in it. Only two per cent tribes have more than 50 cents of land, tribes like 1.3 per cent of Kurichyar and 0.7 per cent of Kattunaikyans are included in this. And 19.3 per cent have no land.

While in Idukki 18.6 per cent tribal households have 5-10 cent of land, 6 per cent of Mannans, 5.3 per cent of Muthuvans, 7.3 per cent of Malayarayans are included in this category. 20.7 per cent have 10-50 cents of land, 8.7 per cent of Mannans, 6.7 per cent of Muthuvans and 5.3 per cent of Malayarayans are included in this group. 16.7 per cent have more than 50 cents of land. And 44 per cent of tribal households have no land.

In Palakkad district, 46 per cent of Irular tribal households have less than 5cents of land. 23.3 per cent have 5-10 cents of land. Tribes like 17.3 per cent of Irular and six per cent of Mudugar have only less than 5 cents. 16 per cent of tribes have 10-50 cents of land. Tribes like 7.3 per cent of Irular and 8.7 per cent of Mudugar are included in it. 6.7 per cent of tribes have more than 50 cents of land, tribes like four per cent of Irular and 2.7 per cent of Mudugar are included in it. Remaining eight per cent of tribes have no land.

Table 5.18
Ownership of land

Tribal communities	Type of ownership of land		Total
	Colony Land	Ownership Land	
Wayanad	42 (28.0)	108 (72.0)	150 (100.0)
Adiya	5 (3.3)	49 (32.7)	54 (36.0)
Kattunaikyan	30 (20.0)	12 (8.0)	42 (28.0)
Paniya	3 (2.0)	20 (13.3)	23 (15.3)
Kurichyar	1 (0.7)	15 (10.0)	16 (10.7)
Uralikurumar	3 (2.0)	12 (8.0)	15 (10.0)
Idukki	66 (44.0)	84 (56.0)	150 (100.0)
Mannan	32 (21.3)	32 (21.3)	64 (42.7)
Muthuvan	34 (22.7)	25 (16.7)	59 (39.3)
Malayarayan Christian	0 (0.0)	27 (18.0)	27 (18.0)
Palakkad	142 (94.7)	8 (5.3)	150 (100.0)
Irular	116 (77.3)	8 (5.3)	124 (82.7)
Mudugar	26 (17.3)	(0.0)	26 (17.3)

Source: Primary data

In Wayanad district, 28 per cent have tribal colony land, i.e these land holders have only a common document in the name of tribal colony. 72 per cent have ownership of land. It includes tribes like 32.7 per cent of Adiyas, 13.3 per cent of Paniyas, 10 per cent of Kurichyar, eight per cent of Kattunaikyan and Uralikurumar. It is interesting to note that 20 per cent of Kattunaikyan tribes have land in common name i.e in the name of their colony (*Ooru bhoomi*).

In Idukki district, 44 per cent of tribal households have colony land, which includes tribes such as 21.3 per cent of Mannans and 22.7 per cent of Muthuvans. Remaining 56 per cent of tribes, such as 21.3 per cent of Mannans, 18 per cent of Malayarayans and 16.7 per cent of Muthuvans have registered land in their own

name. And in Palakkad district, 94.7 per cent of tribal households i.e. 77.3 per cent of Irular and 17.3 per cent of Mudugar tribes owned a common document in the name of their tribal settlement colony. 5.3 per cent of Irular community has ownership of land.

Table 5.19
Asset ownership

Tribal communities	Anyone in the household earning any asset					Total
	Radio	Television	Telephone/ Mobile	Television & Mobile	No Current Assets	
Wayanad	0 (0.0)	2 (1.4)	25 (16.6)	1 (0.7)	122 (81.3)	150 (100.0)
Adiya	0 (0.0)	1 (0.7)	8 (5.3)	0 (0.0)	45 (30.0)	54 (36.0)
Kattunaikyan	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	42 (28.0)	42 (28.0)
Paniya	0 (0.0)	1 (0.7)	2 (1.3)	0 (0.0)	20 (13.3)	23 (15.3)
Kurichyar	0 (0.0)	0 (0.0)	15 (10.0)	1 (0.7)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	0 (0.0)	2 (1.3)	31 (20.7)	0 (0.0)	117 (78.0)	150 (100.0)
Mannan	0 (0.0)	0 (0.0)	9 (6.0)	0 (0.0)	55 (36.7)	64 (42.7)
Muthuvan	0 (0.0)	0 (0.0)	5 (3.3)	0 (0.0)	54 (36.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	2 (1.3)	17 (11.3)	0 (0.0)	8 (5.3)	27 (18.0)
Palakkad	1 (0.7)	0 (0.0)	66 (44.0)	0 (0.0)	83 (55.3)	150 (100.0)
Irular	1 (0.7)	0 (0.0)	48 (32.0)	0 (0.0)	75 (50.0)	124 (82.7)
Mudugar	0 (0.0)	0 (0.0)	18 (12.0)	0 (0.0)	8 (5.3)	26 (17.3)

Source: Primary data

In Wayanad district, 1.4 per cent of tribal households have reported that television is owned by them, which includes tribes, such as 0.7 per cent of Adiyas and Paniyas. 16.6 per cent tribal households have telephone/mobile phones while tribes like 10 per cent of Kurichyar, 5.3 per cent of Adiyas and 1.3 per cent of

Paniyas are included in it. 0.7 per cent of Kurichyar tribal households have both TV and mobile phones. Remaining 81.3 percent have no assets.

In Idukki district 1.3 per cent of Malayarayan tribes have TV. 20.7 per cent tribes have mobile phones which include tribes like 11.3 per cent of Malayarayans, six per cent of Mannans and 3.3 per cent of Muthuvan tribes. While 78 per cent have no assets, 0.7 per cent of Irular tribes in Palakkad district have radio, 32 per cent of Irular and 12 per cent of Mudugar tribes have mobile phone connections in their houses. 55.3 per cent of them reported that they have no such assets in their households.

The socio-economic status of tribes is highlighted in the above discussion indicate the poor and unhygienic life of all communities. Variation across different communities shows that region specific and community specific analysis of poverty and morbidity is to be attempted. This is attempted in subsequent chapters.

References

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6.1 Introduction

Poverty is about not having enough money to meet basic needs including food, clothing and shelter. However, it is much more than just not having enough money. All the earlier definitions of poverty give preference to income and expenditure to explain poverty in the economy. To overcome limitations of these poverty definitions, the capability approach was developed initially by Amartya Sen. Its main concepts are functionings and capabilities. ‘Functionings’ refers to the various things a person succeeds in ‘doing or being’, such as participating in the life of society, being healthy, and so forth, while ‘capabilities’ refers to a person’s real or substantive freedom to achieve such functionings.

Poverty as Capability Deprivation prioritises a focus on ends (people’s capabilities) rather than means (their resources) and since the ways in which human lives can be impoverished are inherently plural, analysis will need to take on a multidimensional form, focussing on the deprivation of people’s core capabilities. The concept of multiple deprivations is defined as the enforced experience of low living standards. This multidimensional approach to conceptualising deprivation as being more than just material deprivation recognises that ‘the lives of human beings can be blighted and impoverished in quite different ways’ (Anand and Sen, 1997).

Poverty as Capability Deprivation dimensionality is circumscribed by the core capabilities which all people are assumed to value. In this framework, poverty is defined as inadequate living standards arising from a lack of resources. Deprivation is defined as the enforced experience of low living standards. In adopting a multidimensional perspective which focuses on people's capabilities, or ends, rather than their resources, or means, it is argued that Poverty as Capability Deprivation can offer the basis for assessment such as whether poverty is increasing or decreasing, which group experienced severely, or which nations have the most poverty, etc. and whether it can provide conceptual underpinning to the multidimensional turn currently being experienced in poverty analysis (Hick, R, 2014).

Since capability framework explains that poverty cannot be adequately measured with income as it is imperfectly measured, and the United Nations Development Program used its Human Poverty Index from 1997 to 2009. Human development index uses three indicators for measure poverty i.e. life expectancy, education and per capita income. In 2010, the UNDP replaced the HPI with its new Multidimensional Poverty Index.

For the sake of analysis of the study, reported morbidities are classified into chronic illnesses and acute illnesses.

6.1.1 Chronic illnesses

A chronic condition is a human health condition or disease that is persistent or otherwise long lasting in its effects or diseases that come with time. The term chronic is often applied when the course of the diseases lasts for more than three months. The US National Centre for health statistics define chronic disease as “generally cannot be prevented by vaccines or cured by medication, nor do they just disappear”. Health damaging behaviours particularly tobacco use, lack of physical activity, and poor eating habits are major contributors to leading chronic illnesses. Chronic illness increases as age increases. Leading chronic illnesses include arthritis, cardio vascular diseases such as heart attack and stroke, cancer, diabetes, epilepsy

and seizures, obesity and oral health problems. Illness which exists more than three months or long lasting is chronic illness.

6.1.2 Acute illnesses

An acute illness or injury is a medical problem with a rapid onset. The term is used to distinguish cases from chronic conditions. Acute illnesses include bacterial and viral infections as well as sudden and short acting physical symptoms. Diseases like common viral and bacterial diseases, such as pink eye, strep throat, sexually transmitted infections, head ache, constipation, cold, fever, vomiting, diarrhea, etc. are included under the category of acute diseases. Usually diseases which are cured within three months are included in acute illness.

Like development, poverty is multi-dimensional, but this is traditionally ignored by head line money metric measure of value. Multidimensional poverty can help the effective allocation of resources by making possible the targeting of those with the greatest intensity of poverty. Table 6.1 shows the MPI of tribes included in the study. For the purpose identifying the severity of poverty, reported values are ranked and the first rank is assigned to those values which reported the highest deprivation.

Table 6.1
Showing Multidimensional Poverty Index

Sl No	Tribal communities	Head count ratio	Rank Tribes	Average intensity of deprivation	Rank Tribes	MPI	Rank Tribes	Rank Districts
1	Adiya	0.874	5	0.400	8	0.349	8	
2	Kattunaikyan	1.00	1	0.556	1	0.556	1	
3	Paniya	0.935	3	0.421	7	0.394	7	
4	Kurichyar	0.382	8	0.190	10	0.073	10	
5	Urali kurumar	0.921	4	0.484	6	0.446	4	
	Wayanad	0.904		0.435		0.393		2
6	Mannan	0.952	2	0.462	4	0.439	5	
7	Muthuvan	0.865	6	0.458	5	0.396	6	
8	Malayarayan	0.650	7	0.299	9	0.194	9	
	Idukki	0.865		0.433		0.375		3
9	Irular	1.00	1	0.501	3	0.501	3	
10	Mudugar	1.00	1	0.525	2	0.525	2	
	Palakkad	1.00		0.505		0.505		1

Source: Primary data

Table 6.1 shows the ranking of tribal communities on the basis of their head count ratio, average intensity of poverty and MPI. In the study the first rank is assigned to those communities with the highest head count score having the maximum value of 1. From table 6.1, it is clear that the highest rank in terms of head count ratio is shared by three communities. So the first rank is assigned to Kattunaikyan community, Irular community and Mudugar community. Almost all communities have scored more than 0.650 except Kurichyar of Wayanad. It is very important to note that Palakkad district which comes Attapadi head count ratio has score 1. In terms of intensity also these communities are poor.

The average intensity of deprivation score of Kattunaikyan community, Irular community and Mudugar communities is 0.556, 0.501, 0.525 respectively. From this, it is clear that the average intensity of deprivation among these communities is different. As Kattunaikyan community has acquired the first position in terms of average intensity of deprivation, the second rank is given to the Mudugar community and the third rank is assigned to the Irular community. So MPI values of these three communities also show that the first rank is given to the Kattunaikan community, second rank is given to the Mudugar community and the third rank is given to the Irular community.

On the basis of deprivation, based on ten indicators in table 6.1, Kattunaikyan community appears completely deprived on the basis of seven indicators in terms of nutrition, and six indicators based on standard of living. They are malnutrition, lack of electricity, clean drinking water, lack of proper sanitation, mud floor in the household, dirty cooking fuel and lack of asset.

Rajasenan and Rajeev (2013) pointed out that nutrition rich quality food is a prerequisite for the health of an individual. As tribe's food consumption is related with the nature of occupation, the majority of households take food twice or thrice a day. Only four per cent of the tribal population get adequate food every day. Lack of nutrition- rich food in sufficient quantity is the main reason for malnutrition

among the tribal communities. Houses of Kattunaikan are mostly kutcha ones, but out of this 40 per cent of them are unserviceable. Majority of Adiyans and Paniyans stay in kutcha or serviceable kutcha houses and 51.9 per cent of Urali communities stay in serviceable kutcha houses (Rajasenana and Abraham, 2013). From the available literature, it is clear that the majority of tribal communities live in poor quality houses. This will adversely affect their living standards. As kutcha houses may not have good floor in their houses, lack of proper sanitation facilities, this situation makes tribal households vulnerable to several health hazards including contagious diseases which in turn cripple their working and earning capacity. Majority of the tribal households do not have latrine facilities. Even if they are available through government schemes, allied facilities like roof, door and water are absent (Rajasenana and Abraham, 2013). Community-wise differences are conspicuous and households with no latrine come to about 70 per cent for Kattunayakan, 46 per cent among the Urali's and 40 per cent each among Adiyans and Paniyans (Rajasenana and Abraham, 2013). From this, it is evident that average intensity of deprivation based on health and standard of living are severe among the Kattunaikyan communities.

Rajasenana and Rajeev (2013) in their study pointed out that housing and other amenities are also noticeably different in the tribal settlements, compared to the main stream Kerala society. They live in low quality houses with low standard of living. 63.07 per cent of tribal houses are constructed using government funds, but these funds are inadequate and they had to raise additional funds. This is the primary reason for non-completion of their houses. Moreover, the quality of their houses is poor and they are in deteriorating condition, seriously lacking basic facilities and some houses do not even have kitchens.

But the conditions of Mudugar community and Irular community are different as Mudugar community and Irular have showed complete deprivation in health indicator related to malnutrition and two indicators representing the standard of living, i.e. lack of drinking water availability and cooking fuel. Other standards of living indicators like sanitation facility and asset facility are also poor. But all of

them are not reported as complete deprivation; yet they are closer to it. Compared to Kattunaikyan community, Mudugar community and Irular community have electricity and good floor availability in their households as majority of their houses are constructed by the support of AHADS and government of Attapadi.

On the basis of head count ratio the second rank is assigned to the Mannan community as its value is 0.952, their average intensity of deprivation being 0.462 and MPI 0.439. So the fourth rank is assigned to Mannan community in terms of the average intensity of deprivation and the fifth rank is in terms of MPI. In the case of the Mannan community, complete deprivation is reported in malnutrition, drinking water availability, sanitation facility and cooking fuel. Safe drinking water in required amount is a distant reality in the tribal settlements. Even though several schemes have been implemented for providing drinking water facilities, most of which are dysfunctional and potable water facility is conspicuously rare. This has a terrible impact on the health of tribes, especially during summer season and sometimes they have to walk long distances to collect water for drinking purposes (Rajaseenan and Rajeev, 2013).

Paniya community has third rank for head count ratio as its value is 0.935. But on the basis of average intensity of deprivation and MPI, this community has seventh rank having values of 0.421 and 0.394. On the basis of ten indicators Paniya community has complete deprivation among four indicators that is malnutrition, sanitation facility, dirt floor and dirty cooking fuel.

Uralikurumar community gets the fourth rank in terms of head count ratio as its value is 0.921, sixth rank is in terms of average intensity of deprivation as its value is 0.484 and fourth rank is in terms of MPI and its value as 0.446. But Uralikurumar community reported complete deprivation among six indicators such as malnutrition, lack of electricity, lack of drinking water availability, lack of better sanitation, cooking fuel and asset ownership.

Adiya community earns the fifth rank in terms of head count ratio and its value is 0.874 and the eighth rank is assigned in terms of average intensity of deprivation and MPI and its value is recorded as 0.400 and 0.349 respectively. Adiya community shows complete deprivation among three indicators only. They are malnutrition, dirty floor and lack of proper cooking facility.

Muthuvan community is ranked sixth in terms of head count ratio and its value is calculated as 0.865, the fifth rank is in terms of average intensity of deprivation and its value is 0.458 and sixth rank in terms of MPI as its value is 0.396. They are deprived in terms of four indicators, like malnutrition, drinking water availability, sanitation facility and dirty cooking fuel.

Malayarayan community carries the seventh rank in terms of head count ratio as its value is 0.650 and also the ninth rank in terms of average intensity of deprivation and MPI as 0.299 and 0.194 respectively. The eighth rank goes to the Kurichyar community on the basis of head count ratio and its value 0.382. The tenth rank is assigned on the basis of average intensity of deprivation and MPI and their values are 0.190 and 0.073 respectively. Malayarayan community and Kurichyar community have shown complete deprivation in one indicator only, i.e. malnutrition. From this it is clear that their intensity of deprivation among the indicators is less compared to other tribal communities. Of the ten communities, Kattunaikyan community is the worst hit as its MPI score is 0.556

On the basis of the above mentioned criteria, the district wise rank is as follows. Palakkad district has the first rank in terms of head count ratio, average intensity of deprivation and MPI and their value reported as 1 for head count ratio, 0.505 for average intensity of deprivation and MPI. The second rank is to the Wayanad district as 0.904 is the headcount ratio, 0.435 the average intensity of deprivation and 0.393 for MPI. The third rank is assigned to Idukki district as their head count ratio is reported as 0.865, their average intensity of deprivation is

reported as 0.433 and MPI as 0.375. On the basis of this Palakkad district is the worst affected in terms of poverty.

6.1.3 Scaling of Multidimensional Poverty Index

Alkire and Santos (2014) consider households to be extremely poor if they are deprived in more than 50 per cent of the sum of weighted indicators. Hence households need to be deprived in several dimensions to be identified as extremely poor. So the present study classified MPI data into three categories of poor, based on their head count ratio, average intensity of deprivation and MPI. Poorest or severe poverty, medium poverty, and low poverty household. Poorest tribal households are those who are deprived by more than 50 per cent of their weighted indicators. Medium poverty households range between 30 to 50 per cent of their weighted indicators. Those households having less than 30 per cent deprivation in weighted indicators are under the category of low poverty households. Alkire and Santos (2014) have used head count index as a measure to scale MPI poor. But the present study included both average intensity of deprivation and MPI to explain the severity of poverty among the tribal households.

6.1.3.1 Scaling of Poverty- based on Multidimensional Poverty Index

Table 6.1 shows that nine tribal communities among three districts were under the category of severe or extreme poverty by means of head count ratio. Kattunaikyan community, Irular community and Mudugar community have experienced complete deprivation in head count ratio, followed by Mannan community 95.2 per cent, Paniya community 93.5 per cent, Uralikurumar community 86.5 per cent and Malayarayan community 65 per cent. Kurichyan community included in medium poverty category having a head count of 38.2 per cent. District-wise analysis shows that Wayanad, Idukki and Palakkad districts fall under the category of severe or extreme poverty. Among these three districts Palakkad stands first having MPI of 0.505, followed by Wayanad 0.393 and Idukki districts as 0.375.

6.1.4 Scaling of Poverty on the Basis of Average intensity of Deprivation

Here also 50 per cent and above weighted deprivation indicators are classified as severe or extreme poverty households or poorest households. Three tribal communities are included in this category- Kattunaikyan community 55.6 per cent, followed by Mudugar community 52.5 per cent and Irular community 50.1 per cent.

Medium poverty households are reported from among five tribal communities. They are Uralikurumar community (48.4 per cent), Mannan community (46.2 per cent), Muthuvan community (45.8 per cent), Paniya community (42.1 per cent) and Adiya community (40.0 per cent). Low poverty households are Malayarayan community (29.9 per cent) and Kurichyar community (19.0 per cent). Although the calculated value of Kurichyar is 19, they were closer to the vulnerability risk towards poverty at 20 per cent.

District-wise analysis shows that Palakkad district is included in the extreme or severe poverty district having 50.5 per cent. Other two districts, Wayanad and Idukki, are included in medium poverty having 43.5 per cent and 43.3 per cent respectively.

6.1.5 Scaling of Poverty on the basis of MPI value

MPI value shows that severe or extreme poverty households are reported from among the communities like Kattunaikyan (55.6 per cent), Mudugar community (52.5 per cent) and Irular community (50.1 per cent). Medium poverty households were reported from among Uralikurumar community (44.6 per cent), Mannan community (43.9 per cent), Muthuvan community (39.6 per cent), Paniya community (39.4 per cent) and Adiya community (34.9 per cent).

According to UNDP (2014), less than 30 per cent are not regarded as multidimensional poor. But households having 20 per cent deprivation in terms of weighted indicators are vulnerable to or at risk of multidimensional poverty. So both

tribes- Malayarayan community(19.4 per cent) and Kurichyar community (7.3 per cent) are not regarded as multidimensionally poor. District- wise analysis shows that Palakkad district has fall on under extreme or severe poverty i.e. 50.5 per cent and other two districts- Wayanad and Idukki- having values 39.3 per cent and 37.5 per cent fall under the category of medium poverty districts.

6.1.6 Ranking of Tribal communities and Districts on the basis of MPI

For the purpose of linking poverty and morbidity also, rank is used as a medium and the first rank is given to those having the highest poverty index value and highest morbidity values. This ranking is continued up to the tenth rank in case of morbidity and poverty index.

While calculating MPI, the first rank is given to Palakkad district showing 0.505 and second and third rank is given to Wayand and Idukki having MPI of 0.393 and 0.375 respectively. Among tribes in three districts the first rank based on MPI is given to Kattunaikyan community, followed by Mudugar community and Irular community in Palakkad district. The fourth rank is given to the Uralikurumar community of Wayanad district. The fifth and sixth ranks are given to the Mannan community and Muthuvan community of Idukki district respectively. The seventh and the eighth ranks are given to Paniya community and Adiya community of Wayanad district. The ninth rank is given to the Malayarayan (Christian) community of Idukki district and the tenth rank is given to Kurichyar community of Wayanad district.

6.1.7 Ranking of Tribes on the basis of Deprivation score and Morbidity

Table: 6.2
Ranking of Tribal community based on mean deprivation score, mean chronic illness and mean acute illness

Mean censored deprivation score				Mean chronic illness		Mean acute illness	
Sl no	Tribal communities	Mean	Rank	Mean	Rank	Mean	Rank
1	Adiya	18.21	8	4.75	4	3.75	9
2	Kattunaikyan	27.94	1	5.58	3	7.45	2
3	Paniya	19.03	7	4.11	7	4.72	6
4	Kurichyar	9.51	10	4.22	6	2.94	10
5	Uralikuarumar	25.48	2	6.61	1	4.09	8
6	Mannan	22.36	6	3.66	9	6.74	3
7	Muthuvan	24.39	3	5.72	2	7.56	1
8	Malayarayan	13.73	9	2.67	10	4.91	5
9	Irular	23.43	5	3.88	8	4.38	7
10	Mudugar	24.02	4	4.50	5	5.28	4
	Overall	22.00		4.43		5.39	

Source: primary data.

Among the ten tribal communities, the highest deprivation score is recorded by Kattunaikyan community having value of 27.94. So the first rank in terms of mean censored deprivation score is given to Kattunaikyan community. Their mean chronic illness is reported as 5.58 and mean acute illness is reported as 7.45. This shows that the mean acute illness reported in Kattunaikyan community is greater than mean chronic illness. Kattunaikyan community attained the third rank in terms of chronic illness and second in terms of acute illness.

The second rank in terms of mean censored deprivation score is given to Uralikurumar community as their mean censored deprivation score is recorded as 25.48, mean chronic illness reported as 6.61 and mean acute illness reported as 4.09. Chronic illness reported from Uralikurumar community is greater than acute illness, as Uralikurumar attained the first rank in terms of chronic illness and eight rank in terms of acute illness.

Muthuvan community has scored third rank in terms of mean censored deprivation 24.39 and mean chronic illness is 5.72 and mean acute illness is 7.56. Here acute illness reported from among Muthuvan community is higher compared to their chronic illness. Muthuvan community scored second rank in chronic illness and first rank in acute illness.

Mudugar community secured fourth rank in terms of mean censored deprivation score as 24.02, their mean chronic illness is reported as 4.50 and mean acute illness reported is 5.28. Mudugar community's acute illness is greater compared to their chronic illness. As this community has fifth rank in terms of mean chronic illness and fourth rank in terms of mean acute illness.

Fifth rank in terms of mean censored deprivation score is assigned to Irular community having value of 23.43 and their mean chronic illness is recorded as 3.88 and mean acute illness is 4.38. This shows that acute illness reported among the Irular community is greater than chronic illness. As rank given to chronic illness among the community is eight and acute illness it is seventh rank.

Mannan community has the sixth rank in terms of mean censored deprivation score at 22.36 and mean chronic illness reported among the community is 3.66 and mean acute illness is recorded as 6.74. Mannan community also reported greater acute illness compared to that of their chronic illness. As such, only ninth rank is given to the community for chronic illness and won third rank in terms of acute illness.

Paniya community reported mean censored deprivation score of 19.03, getting seventh rank and their mean chronic illness reported is 4.11 and mean acute illness reported is 4.72. So acute illness reported among the community is greater than chronic illness. And seventh rank is given to mean chronic illness and sixth rank is given to mean acute illness.

The mean deprivation score of Adiya community is 18.21, having eighth rank and their mean chronic illness reported is 4.75 and mean acute illness reported is 3.75. Adiya community reported higher chronic illness compared to that of acute illness. So fourth rank is assigned to Adiya community for chronic illness and ninth rank is assigned to acute illness. Mean deprivation score reported by Malayarayan community is 13.73 and Kurichyar community is 9.51 showing the lowest values. So ninth rank is assigned to Malayaran community and tenth rank is given to Kurichyar community. Mean chronic illness reported among Malayarayan community is 2.67, having tenth rank and fifth rank in terms of acute illness at 4.91. In the community, acute illness is reported greater than chronic illness. Mean chronic illness reported among the Kurichyar community is 4.22, having sixth rank and mean acute illness reported among them is 2.94 having tenth rank. Chronic illness reported among Kurichyar community is greater than acute illness.

6.2 To study the extent of poverty

The present study uses Discriminant analysis to explain the relationship between observations. Discriminant analysis is the appropriate statistical technique when the dependent variable is a categorical variable and independent variables are metric variables (Haier et al., 2012). The dependent variable consists of two or more group/ classifications. The analysis involves a variate which is a combination of independent variables that will discriminate best between objects. We can derive the variate for a discriminant analysis (also known as discriminant function) from equation (1) and involves the linear combinations of the following:

$$D = b_0 + b_1X_1 + b_2X_2 + b_3X_3 \dots \dots \dots b_kX_k \dots \dots \dots (1)$$

Where

D= Discriminant score

bs= Discriminant Coefficients

Xs = predictor or independent variable

Discriminant analysis is the appropriate statistical technique for testing the hypothesis that the group mean of a set of independent variables for two or more groups is equal. To do this for the study, tribes are taken as groups and censored deprivation score and morbidity as discriminating variables. Here morbidity is again classified into two acute illness and chronic illness. Thus dependent variable in the present is ten tribe categories from three districts.(Adiya, Kattunaikyan, Paniya, Kurichyar, Uralikurumar, Mannan, Muthuvans, Malayarayans, Irular and Mudugars) and independent variables are mean censored deprivation score and morbidities. The present study looks at the mean scores of each group to make visual inspection of the independent variables to know whether they discriminate among the groups or not. The study uses Wilk's Lamda univariate F ratios for each independent variable to infer its statistical significance.

Table 6.3
Group Statistics and Test of Equality for the Estimation of Sample

SI No	Tribal communities	Mean censored deprivation score	Mean Chronic illness	Mean Acute illness
1	Adiya	18.21	4.75	3.75
2	Kattunaikyan	27.94	5.58	7.45
3	Paniya	19.03	4.11	4.72
4	Kurichyar	9.51	4.22	2.94
5	Uralikurumar	25.48	6.61	4.09
6	Mannan	22.36	3.66	6.74
7	Muthuvan	24.39	5.72	7.56
8	Malayarayan	13.73	2.67	4.91
9	Irular	23.43	3.88	4.38
10	Mudugar	24.02	4.50	5.28
	Wilkslamda	0.661	0.930	0.874
	F	25.098	3.678	7.050
	Significance	0.000	0.000	0.000

Source: primary data.

Wilk's Lamda and the F test are the typical measures of significance of differences across groups (Malhotra Desh, 2011). However, they assess the overall differences and do not guarantee that each group is significant from others.

Accordingly, the validity of the inferences on their overall differences largely depends on the presence of individual group differences. On a univariate basis, three variables deprivation score, chronic illness and acute illness display significant differences between their group means. It is evident that deprivation score acute illness and chronic illness significantly discriminate among the tribe communities.

Among ten tribal communities the highest mean censored deprivation score is recorded by Kattunaikyan community having value of 27.94 and their mean chronic illness reported as 5.58 and mean acute illness reported as 7.45. The second highest mean censored deprivation score is recorded by Uralikurumar community as their mean censored deprivation score is 25.48, their mean chronic illness is reported as 6.61 and mean acute illness as 4.09. The Muthuvan community has the third highest mean censored deprivation score having a value of 24.39. Their mean chronic illness is 5.72 and mean acute illness is 7.56. Mudugar community's position in terms of mean censored deprivation score is fourth and value reported is 24.02 and their mean chronic illness is 4.50 and mean acute illness 5.28. The fifth highest mean censored deprivation score reported by Irular community's is 23.43 and their mean chronic illness is reported is 3.88 and mean acute illness is 4.38. The mean censored deprivation score of Mannan community is recorded as the sixth highest position with their value reported at 22.36. Mannan community's mean chronic illness is 3.66 and mean acute illness is 6.74. Paniya community has a mean deprivation score of 19.03. They have reported a mean chronic illness of 4.11 and mean acute illness of 4.72. The next position of mean censored deprivation score is given to Adiya community which has their value of 18.21. The mean chronic illness reported by them is 4.75 and the mean acute illness is 3.75. The lowest mean censored deprivation score of Kurichyar community is 9.51 and their mean chronic illness is 4.22 and the mean acute illness is 2.94. From this we can infer that there are considerable differences between tribal communities in terms of censored deprivation score, chronic illness and acute illness.

Most significant variables have the lowest Wilk's Lamda values, which add to the validity of the findings. Although greater statistical significance corresponds to higher overall discrimination, it does not always correspond to the greatest discrimination among all the groups.

6.3 To find the relationship between poverty and its determinants logistic regression is used for this study.

Nine variables are selected for testing, based on available review of literatures. Education and age are the main social determinants influencing poverty. Percentage of females in the household is used as variable, as increased female participation in households had an effect on poverty. Dependency ratio of the household increases as they are living without earning income. Morbidity is one of the important determinants influencing poverty.

The reported morbidity is classified as chronic and acute illness ; religion is regarded as one of social variables influencing poverty as some regarded as forward communities are efficient in education, employment and income. Tribal community and districts are also used as determinants for assessing the poverty .Here the mean deprivation score of households is taken to identify poverty.

The highest education reported among each tribal household is classified into three groups, i.e. primary education upto 8th standard, secondary education from 9th to 12th standard and higher education degree and above. The highest age of each household is classified into three groups, 25-40 years, 40-55 years and 55 years and above; the percentage of females in each household is classified into four groups below 25 per cent, 25- 50 per cent, 50 -75 per cent, 75- 100 per cent, chronic illness and acute illness are classified into four groups , below 5 per cent, 5-10 per cent, 10-15 per cent,15 -20 per cent, censored deprivation score of each tribal household is classified into three group below 15 per cent,15-30 per cent, 30 per cent and above. Malayarayan is the only Christian community and religion is classified into Hindu

and Christian, ten tribal communities and three districts are also taken up in this study.

6.3.1 Logistic Regression Model

On the basis of Pearson's Chi-square, the present study determines whether the predictors highest education level of household, highest age group of the household, percentage of females in the household, percentage of morbidities that is chronic illness, acute illness, religion, tribal community and district are associated with the poverty.

The present study used a Logistic regression model, given by

$$\text{Logit}(p) = \ln\left(\frac{p}{1-p}\right) = B_0 + B_1X_1 + B_2X_2 + \dots + B_9X_9$$

Where X_1, \dots, X_9 were the predictor variables, highest education level of household, age of the household, highest percentage of females in the households, chronic illness, acute illness, deprivation score of household, religion, tribal community and districts respectively. And p denoted the probability that the household is poor or not.

The forward selection, backward elimination and stepwise (logistic) regression methods were determined automatically as to which variables to add or drop from the model. The conditional options use a computationally faster version of the likelihood ratio test.

Table 6.4
Results of Logistic regression model

Variable	B	Std. Error	Sig.	Exp(B)
Education				
Illiterate	Reference			
Below primary	2.384	.585	.000	10.851
Primary	2.223	.520	.000	9.234
Secondary	2.427	1.136	.033	11.324
Age				
55 Above	Reference			
25-40	2.893	.600	.000	18.053
40-55	1.003	.387	.010	2.725
Morbidity- Chronic illness				
10-15%	Reference			
Below 5 %	3.207	1.041	.002	24.696
5-10%	1.501	.870	.084	4.487
Acute illness				
15-20%	Reference			
Below 5%	6.603	.549	.000	737.74
5-10%	6.603	.437	.000	429.464
10-15%	4.744	.000		114.896

Education seems to be having independent effect on poverty. The highest educational level of the households is classified into four groups. 'Illiterate' is considered as the reference group. The result shows that poverty of tribal population is mainly associated with the highest educational level of member in the household. 'Below primary' and primary education show a significance level of 0.000*. Secondary level education shows a significance level of 0.033. This shows that lower educational level of the household adversely affected poverty. That means education has apparently an independent effect on poverty.

Age is a significant predictor for poverty in all age groups. However, the magnitudes vary among different age groups. Age of the households is classified into three groups. 55 years and above are considered as reference group. The result shows that 25-40 years age group shows a significance level of 0.000. This age group is more productive and has better health status compared to other age groups in their earning capacity, as lower employment level influenced to poverty.

Morbidity is another determinant which influences poverty of tribal population. Percentage of illness reported in each household is taken and chronic illnesses are classified into three groups. 10- 15% reported households are taken as the reference group. Below 5 % reported households show a significance level of 0.002. 5-10 % reported households show a significance level of 0.084. Acute illnesses are also classified into four groups. 15-20 % reported households are taken as the reference group. Below 5 % reported households and 5-10 % reported households have a significance level of 0.000. This shows that acute illness also has some association with poverty of tribal population.

Among nine independent variables selected for the study, four variables are statistically significant. Education, age, chronic illness and acute illness are the independent variables showing significance. Thus the final model that was fit to the data was given by

$$\text{Logit}(p) = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4$$

Where X1 is Education, X2 is Age, X3 is chronic illness, and X4 is acute illness. This was arrived at using a forward stepwise selection method. Results show that the education level of household, age of the household members, chronic illness and acute illness influence poverty of tribal communities.

Blank (2008) pointed out that poverty is an inherently vague concept, and developing a poverty measure requires a number of relatively arbitrary assumptions. Measuring and characterizing poverty using multiple dimensions of deprivation provides a more complete picture of poverty since the poor are not only those who lack income but also those who do not possess minimally acceptable standards in a number of dimensions of economic wellbeing (Dhonde, S and Haveman, R, 2015). It is evident that poverty is a multidimensional concept and it cannot be explained using any traditional income method. So the present study tries to explain poverty related factors included in the sample data to show its depth.

6.4 Housing conditions of Tribal Community

Table 6.5
Dwelling unit

Tribal communities	Dwelling unit		Total
	Owned	Others	
Wayanad	150 (100.0)	0 (0.0)	150 (100.0)
Adiya	54 (36.0)	0 (0.0)	54 (36.0)
Kattunaikyan	42 (28.0)	0 (0.0)	42 (28.0)
Paniya	23 (15.3)	0 (0.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	15 (10.0)	0 (0.0)	15 (10.0)
Idukki	150 (100.0)	0 (0.0)	150 (100.0)
Mannan	64 (42.7)	0 (0.0)	64 (42.7)
Muthuvan	59 (39.3)	0 (0.0)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	139 (92.7)	11 (7.3)	150 (100.0)
Irular	113 (75.3)	11 (7.3)	124 (82.7)
Mudugar	26 (17.3)	0 (0.0)	26 (17.3)

Source: Primary data

Dwelling units of tribes in both Wayanad and Idukki are owned by themselves, except Palakkad where 92.7 per cent of tribes are living in their own houses, 7.3 per cent of tribes are living with others.

Table 6.6
Assistance received for Construction of Houses

Tribal communities	Govt/ST development Department	Own construction	Loan from Bank	Both from Govt and own	Total
Wayanad	87 (58.0)	55 (36.7)	0 (0.0)	8 (5.3)	150 (100.0)
Adiya	37 (24.7)	17 (11.3)	0 (0.0)	0 (0.0)	54 (36.0)
Kattunaikyan	28 (18.7)	14 (9.3)	0 (0.0)	0 (0.0)	42 (28.0)
Paniya	4 (2.7)	19 (12.7)	0 (0.0)	0 (0.0)	23 (15.3)
Kurichyar	7 (4.7)	1 (0.7)	0 (0.0)	8 (5.3)	16 (10.7)
Uralikurumar	11 (7.3)	4 (2.7)	0 (0.0)	0 (0.0)	15 (10.0)
Idukki	48 (32.0)	75 (50.0)	14 (9.3)	13 (8.7)	150 (100.0)
Mannan	23 (15.3)	41 (27.3)	0 (0.0)	0 (0.0)	64 (42.7)
Muthuvan	25 (16.7)	34 (22.7)	0 (0.0)	0 (0.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	0 (0.0)	14 (9.3)	13 (8.7)	27 (18.0)
Palakkad	150 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	150 (100.0)
Irular	124 (82.7)	0 (0.0)	0 (0.0)	0 (0.0)	124 (82.7)
Mudugar	26 (17.3)	0 (0.0)	0 (0.0)	0 (0.0)	26 (17.3)

Source: Primary data

But an interesting fact is that 58 per cent of tribal houses in Wayanad district are constructed by the government or the ST Development Department, 36.7 per cent of tribes' houses are constructed by themselves, and 5.3 per cent of houses are constructed both by government and tribes themselves. Adiyas and Kattunaikyans are the major tribes whose houses are constructed by the government or the ST Development Department. Kurichyar community made houses with the support of government and their own funds.

In Idukki district, 32 per cent of tribal houses are constructed by the government or the ST Development Department, 50 per cent of houses are constructed by themselves, 9.3 per cent are constructed with loan from banks and 8.7 per cent are constructed both by the government and themselves. Muthuvans and Mannans constructed houses with the support of government. Malayarayans tribe made houses both by means of loans from banks and support by the government. In Palakkad district, almost all the houses are constructed either by, the ST Development or government and AHADS.

Table 6.7
Type of housing

Tribal communities	Type of housing			Total
	Kutcha	Semi-pucca	Pucca	
Wayanad	53 (35.3)	97 (64.7)	0 (0.0)	150 (100.0)
Adiya	17 (11.3)	37 (24.7)	0 (0.0)	54 (36.0)
Kattunaikyan	13 (8.7)	29 (19.3)	0 (0.0)	42 (28.0)
Paniyar	19 (12.7)	4 (2.7)	0 (0.0)	23 (15.3)
Kurichyar	0 (0.0)	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	4 (2.7)	11 (7.3)	0 (0.0)	15 (10.0)
Idukki	75 (50.0)	61 (40.7)	14 (9.3)	150 (100.0)
Mannan	41 (27.3)	23 (15.3)	0 (0.0)	64 (42.7)
Muthuvan	34 (22.7)	25 (16.7)	0 (0.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	13 (8.7)	14 (9.3)	27 (18.0)
Palakkad	13 (8.7)	137 (91.3)	0 (0.0)	150 (100.0)
Irular	0 (0.0)	124 (82.7)	0 (0.0)	124 (82.7)
Mudugar	13 (8.7)	13 (8.7)	0 (0.0)	26 (17.3)

Source: Primary data

There is relationship between housing conditions and health of an individual. Every one requires a house to protect their life from thieves, flood, rain, etc. and to

lead a healthy and contented life. The earlier tribal houses, their structure, size and construction are very much related to their eco system and culture.

In Wayanad district 35.3 per cent of tribes houses are kutcha type, and remaining 64.7 per cent of tribes are living in semi-pucca houses. Paniyas, Adiyas and Kattunaikyans are the major tribes living in Kutcha houses. Except other tribes, only very small 2.7 per cent from Paniya tribes are living in semi-pucca houses made up of tiled roof. Rests of these tribes are living in Kutcha houses made up of thatched roof.

In Idukki district, 50 per cent of tribes are living in Kutcha houses, 40.7 per cent of tribes houses are semi-pucca, 9.3 per cent are living in pucca houses. It is only Malayarayan tribes 9.3 per cent in the district are living in Pucca houses. Of the rest, 8.7 per cent are living in semi-pucca houses made up of tiled roof. 27.3 per cent of Mannans and 22.7 per cent of Muthuvans tribes are living in Kutcha houses made up of thatched roof. It is only 15.3 per cent of Mannans and 16.7 per cent of Muthuvans are living in semi-pucca houses made up of tiled roof. Only Malayarayan tribes in the district have made better living conditions compared to others.

In the case of Palakkad district, 91.3 per cent of Irular tribes are living in semi-pucca houses made up of tiled roof. 8.7 per cent of Mudugar tribes in the district are living in kutcha houses made up of thatched roof. However a majority of their houses are semi-pucca and pucca in the districts which are constructed by the government or the ST Development Department and AHADS.

Table 6.8
Type of floor

Tribal communities	Type of floor			Total
	Tiled	Cemented	Mud	
Wayanad	7 (4.7)	13 (8.7)	130 (86.6)	150 (100.0)
Adiya	0 (0.0)	0 (0.0)	54 (36.0)	54 (36.0)
Kattunaikyan	0 (0.0)	0 (0.0)	42 (28.0)	42 (28.0)
Paniya	0 (0.0)	0 (0.0)	23 (15.3)	23 (15.3)
Kurichyar	7 (4.7)	9 (6.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	4 (2.7)	11 (7.3)	15 (10.0)
Idukki	0 (0.0)	57 (38.0)	93 (62.0)	150 (100.0)
Mannan	0 (0.0)	13 (8.7)	51 (34.0)	64 (42.7)
Muthuvan	0 (0.0)	17 (11.3)	42 (28.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	0 (0.0)	45 (30.0)	105 (70.0)	150 (100.0)
Irular	0 (0.0)	36 (24.0)	88 (58.7)	124 (82.7)
Mudugar	0 (0.0)	9 (6.0)	17 (11.3)	26 (17.3)

Source: Primary data

In Wayanad district, 86.6 per cent of tribal houses floor are with mud, 8.7 are cemented, 4.7 are tiled. These tiled houses floors are made by Kurichyar community and remaining 6 per cent of their houses floors are made up of cement. Except Kurichyar tribes, all other tribes' houses floor is made up of mud.

In Idukki district, 62 per cent of tribal houses' floor is constructed with mud, 38 per cent of houses floor are constructed with cement. In Idukki district, 18 per cent of Malayarayan, 11.3 per cent of Muthuvans and 8.7 per cent of Mannans houses' floors are made up of cement. 34 per cent of Mannans and 28 per cent of Muthuvans houses' floors are made up of mud. It is clear that more than 70 per cent of tribal households used mud for floor.

In the case of Palakkad, 70 per cent of tribes houses are constructed with mud, and the remaining 30 per cent are cemented. 24 per cent of Irular and six per cent of Mudugars houses floors are made up of cement. The remaining 58.7 per cent of Irulars and 11.3 per cent of Mudugars tribes' houses floors are made up of mud.

Table 6.9
Number of rooms available in the houses

Tribal communities	No of rooms available in house			Total
	Four Rooms	Three Rooms	Two Rooms	
Wayanad	10 (6.7)	95 (63.3)	45 (30.0)	150 (100.0)
Adiya	0 (0.0)	46 (30.7)	8 (5.3)	54 (36.0)
Kattunaikyan	0 (0.0)	28 (18.7)	14 (9.3)	42 (28.0)
Paniya	0 (0.0)	4 (2.7)	19 (12.7)	23 (15.3)
Kurichyar	10 (6.7)	6 (4.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	11 (7.3)	4 (2.7)	15 (10.0)
Idukki	14 (9.3)	61 (40.7)	75 (50.0)	150 (100.0)
Mannan	0 (0.0)	23 (15.3)	41 (27.3)	64 (42.7)
Muthuvan	0 (0.0)	25 (16.7)	34 (22.7)	59 (39.3)
Malayarayan Christian	14 (9.3)	13 (8.7)	0 (0.0)	27 (18.0)
Palakkad	0 (0.0)	137 (91.3)	13 (8.7)	150 (100.0)
Irular	0 (0.0)	124 (82.7)	0 (0.0)	124 (82.7)
Mudugar	0 (0.0)	13 (8.6)	13 (8.7)	26 (17.3)

Source: Primary data

The number of rooms in the house is very important as far as the indoor air pollution is concerned. It is being observed that if there are less number of rooms in the houses, chances of respiratory diseases increase due to lesser dispersion of smoke.

In the case of room availability in Wayanad, only 6.7 per cent of their houses have four rooms, 63.3 per cent are three room houses, and 30 per cent have two

room houses. Only 6.7 per cent of Kurichyar tribes reported that their houses include four rooms and four per cent of their houses have three rooms. Only 2.7 per cent of Paniyas and other tribes reported that their houses include three rooms. But the highest per cent of two room houses are Paniyas', followed by Kattunaikyans', Adiyas' and Uralikurumars.'

In Idukki district, only 9.3 per cent of Malayarayans reported that their houses include four rooms, 8.7 per cent of their houses have three rooms. 40.7 per cent of tribes have three room houses and it includes 16.7 per cent of Muthuvans and 15.3 per cent of Mannans. The remaining 50 per cent tribes have two room houses only. The highest per cent of two room houses are reported by Mannans (27.3 per cent), followed by Muthuvans (22.7 per cent).

In Palakkad district 91.3 per cent has three room houses and it include 82.7 per cent of Irular and 8.6 per cent of Mudugar houses. These houses are built by AHADS and Government. 8.7 per cent of Mudugars houses contain two rooms only.

Table 6.10
Separate kitchen

Tribal communities	Any separate kitchen		Total
	Yes	No	
Wayanad	16 (10.7)	134 (89.3)	150 (100.0)
Adiya	0 (0.0)	54 (36.0)	54 (36.0)
Kattunaikyan	0 (0.0)	42 (28.0)	42 (28.0)
Paniyas	0 (0.0)	23 (15.3)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	27 (18.0)	123 (82.0)	150 (100.0)
Mannan	0 (0.0)	64 (42.7)	64 (42.7)
Muthuvan	0 (0.0)	59 (39.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	45 (30.0)	105 (70.0)	150 (100.0)
Irular	36 (24.0)	88 (58.7)	124 (82.7)
Mudugar	9 (6.0)	17 (11.3)	26 (17.3)

Source: Primary data

In the case of availability of kitchen facility, only 10.7 per cent of kurichar tribe households in Wayanad have separate kitchen, and the remaining 89.3 per cent of other tribal houses have no separate kitchen. In Idukki district, 18 per cent of Malayarayan tribe houses have separate kitchen and the remaining 82 per cent tribe houses have no separate kitchen in their houses. In Palakkad district 30 per cent of tribal households have kitchen facility, as the majority of them are constructed by the ST Development Department and AHADS. Houses which were constructed recently are equipped with kitchen facilities. Among these, 24 per cent of Irular tribe households and six per cent of Mudugar tribe households are included. 58.7 per cent of Irular tribe households and 11.3 per cent of Mudugar tribe households are not equipped with proper kitchen facility in their houses.

Table 6.11
Square feet of houses

Tribal communities	How many square feet			Total
	Up to 500 Square feet	500 Square feet	501 - 1000 Square feet	
Wayanad	73 (48.7)	67 (44.7)	10 (6.7)	150 (100.0)
Adiya	8 (5.3)	46 (30.7)	0 (0.0)	54 (36.0)
Kattunaikyan	42 (28.0)	0 (0.0)	0 (0.0)	42 (28.0)
Paniya	19 (12.7)	4 (2.7)	0 (0.0)	23 (15.3)
Kurichyar	0 (0.0)	6 (4.0)	10 (6.7)	16 (10.7)
Uralikurumar	4 (2.7)	11 (7.3)	0 (0.0)	15 (10.0)
Idukki	75 (50.0)	75 (50.0)	0 (0.0)	150 (100.0)
Mannan	41 (27.3)	23 (15.3)	0 (0.0)	64 (42.7)
Muthuvan	34 (22.7)	25 (16.7)	0 (0.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	13 (8.7)	137 (91.3)	0 (0.0)	150 (100.0)
Irular	0 (0.0)	124 (82.7)	0 (0.0)	124 (82.7)
Mudugar	13 (8.7)	13 (8.7)	0 (0.0)	26 (17.3)

Source: Primary data

In Wayanad district, 48.7 per cent tribes are living in less than 500 sqft of houses, Kattunaikyan and Paniyas are the major tribes living in these houses. 44.7 per cent of tribes are living in 500 sqft houses. Adiya is the main tribe living in these houses. 6.7 per cent of Kurichyar tribe are living in 501-1000 sqft houses.

In Idukki district, 50 per cent of their houses have less than 500 sqft and the remaining 50 per cent have 500 sqft. 27.3 per cent of Mannans and 22.7 per cent of Muthuvans are living in less than 500 sqft houses. It is 18 per cent of Malayarayan, 16.7 per cent of Muthuvans and 15.3 per cent of Mannans that are living in 500 sqft houses. In Palakkad district, 8.7 per cent of their houses have less than 500 sqft and 82.7 per cent of Irulars and 8.7 per cent of Mudugars are living in 500 sqft houses.

Table 6.12
Primary source of energy for cooking

Tribal communities	Primary source of energy for cooking		Total
	LPG	Firewood & Chips	
Wayanad	7 (4.7)	143 (95.3)	150 (100.0)
Adiya	0 (0.0)	54 (36.0)	54 (36.0)
Kattunaikyan	0 (0.0)	42 (28.0)	42 (28.0)
Paniya	0 (0.0)	23 (15.3)	23 (15.3)
Kurichyar	7 (4.7)	9 (6.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	0 (0.0)	150 (100.0)	150 (100.0)
Mannan	0 (0.0)	64 (42.7)	64 (42.7)
Muthuvan	0 (0.0)	59 (39.3)	59 (39.3)
Malayarayan Christian	0 (0.0)	27 (18.0)	27 (18.0)
Palakkad	0 (0.0)	150 (100.0)	150 (100.0)
Irular	0 (0.0)	124 (82.7)	124 (82.7)
Mudugar	0 (0.0)	26 (17.3)	26 (17.3)

Source: Primary data

In Wayanad district, only 4.7 per cent of Kurichyar tribes reported that they are using LPG and the remaining 95.3 per cent of tribes are using fire woods and chips for their cooking. In Idukki district, Mannan, Muthuvans and Malayarayans reported that they are using traditional firewoods and chips for their cooking. In Palakkad district also, both the Irulars and Mudugars are using firewoods and chips for their cooking. This shows their backwardness.

Table 6.13
Energy for lighting

Tribal communities	Energy for lighting			Total
	Electricity	Candle	Kerosene	
Wayanad	65 (43.3)	46 (30.7)	39 (26.0)	150 (100.0)
Adiya	38 (25.3)	1 (0.7)	15 (10.0)	54 (36.0)
Kattunaikyan	0 (0.0)	26 (17.3)	16 (10.7)	42 (28.0)
Paniya	11 (7.3)	10 (6.7)	2 (1.3)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	9 (6.0)	6 (4.0)	15 (10.0)
Idukki	70 (46.7)	47 (31.3)	33 (22)	150 (100.0)
Mannan	23 (15.3)	29 (19.3)	12 (8.0)	64 (42.7)
Muthuvan	20 (13.3)	18 (12.0)	21 (14.0)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	0 (0.0)	27 (18.0)
Palakkad	93 (62.0)	50 (33.3)	7 (4.7)	150 (100.0)
Irular	84 (56.0)	40 (26.7)	0 (0.0)	124 (82.7)
Mudugar	9 (6.0)	10 (6.7)	7 (4.7)	26 (17.3)

Source: Primary data

Electrification is an important index of the standard of living of the households. It is also one of the determinants in the calculation of MPI. The accessibility and utilisation of radio, television and other info-entertainment facilities depend on the availability of electric connection in the dwelling place. The tribes are

natives of the forest and in their traditional houses, electricity is a rare thing and the afore mentioned electronic media are considered luxuries. The data reveals that the situation is extremely grim as far as the source of light is concerned.

In Wayanad, 43.3 per cent of the tribal houses have electricity, and the remaining one has no electricity. Of these, 30.7 per cent use candles and 26 per cent have using kerosene as their fuel for their lighting. 25.3 per cent of Adiyas, 10.7 per cent of Kurichyars, 7.3 per cent of Paniyars are using electricity for lighting their houses. The rest of tribes are using candles and kerosene for lighting their houses. It is to be noted that of the five tribes selected in the district, not any houses of Kattunaikyans and Uralikurumars are electrified.

In Idukki district 46.7 per cent of tribal houses are electrified and they include 18 per cent of Malayarayans, 15.3 per cent of Mannans, and 13.3 per cent of Muthuvans community. Rest of others are not electrified. It is noted that all houses of Malayarayan community are electrified. And almost all these tribes get the support of Christian Missioneries.

In Palakkad district, 62 per cent tribal houses are electrified. These include 56 per cent of Irulars and only six per cent of Mudugars. And the rest of houses are not electrified. This doesn't mean that they are forward tribes, only with the support of AHADS and Government their houses electrified.

Table 6.14
Major source of drinking water

Tribal communities	Major source of drinking water					Total
	Common Pipe	Common Well	Jalanidhi	Spring	Common Pond	
Wayanad	13 (8.7)	44 (29.3)	93 (62.0)	0 (0.0)	0 (0.0)	150 (100.0)
Adiya	0 (0.0)	0 (0.0)	54 (36.0)	0 (0.0)	0 (0.0)	54 (36.0)
Kattunaikyan	13 (8.7)	29 (19.3)	0 (0.0)	0 (0.0)	0 (0.0)	42 (28.0)
Paniya	0 (0.0)	0 (0.0)	23 (15.3)	0 (0.0)	0 (0.0)	23 (15.3)
Kurichyar	0 (0.0)	0 (0.0)	16 (10.7)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	15 (10.0)
Idukki	0 (0.0)	0 (0.0)	0 (0.0)	150 (100.0)	0 (0.0)	150 (100.0)
Mannan	0 (0.0)	0 (0.0)	0 (0.0)	64 (42.7)	0 (0.0)	64 (42.7)
Muthuvan	0 (0.0)	0 (0.0)	0 (0.0)	59 (39.3)	0 (0.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	0 (0.0)	0 (0.0)	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	71 (47.3)	0 (0.0)	70 (46.7)	0 (0.0)	9 (6.0)	150 (100.0)
Irular	71 (47.3)	0 (0.0)	53 (35.3)	0 (0.0)	0 (0.0)	124 (82.7)
Mudugar	0 (0.0)	0 (0.0)	17 (11.3)	0 (0.0)	9 (6.0)	26 (17.3)

Source: Primary data

Clean drinking water is an important civic amenity required for healthy living. Many communicable diseases are water-borne. Moreover, it is considered as one of the factors used for calculating multidimensional poverty index. As such, non-availability of clean drinking water is a fundamental health hazard. The nature of water supply in the tribal area gives evidence about health and sanitation of the tribal community. Availability of pure drinking water is a major problem in many of the tribal settlements.

8.7 per cent of their houses have common pipe in Wayanad district; 29.3 per cent have a common well and remaining 62 per cent depend upon Jalanidhi for their drinking water. Among the five tribes in the district, Kattunaikyan suffered most

deprivation in the availability of drinking water. They are sharing common pipe and common well. Uralikurumars are also experiencing the same difficulty as they need to share common well.

In Idukki district, availability of drinking water is a serious issue. All the tribal communities depend upon springs for drinking water. And they need to walk long distances to collect this water. But in the case of Palakkad 47.3 per cent of tribes depend upon common pipe for drinking water availability, 46.7 per cent have Jalanidhi and the remaining six per cent depend on common pond for their drinking water.

Table 6.15
Distance to the source of water

Tribal communities	Distance to the source of water				Total
	Outside dwelling but within premises	Outside Premises < 1 Km	Outside Premises 1 - 2 Km	Outside Premises 2 - 5 Km	
Wayanad	93 (62.0)	32 (21.3)	25 (16.7)	0 (0.0)	150 (100.0)
Adiya	54 (36.0)	0 (0.0)	0 (0.0)	0 (0.0)	54 (36.0)
Kattunaikyan	0 (0.0)	17 (11.3)	25 (16.7)	0 (0.0)	42 (28.0)
Paniya	23 (15.3)	0 (0.0)	0 (0.0)	0 (0.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	0 (0.0)	0 (0.0)	15 (10.0)
Idukki	0 (0.0)	0 (0.0)	145 (96.7)	5 (3.3)	150 (100.0)
Mannan	0 (0.0)	0 (0.0)	64 (42.7)	0 (0.0)	64 (42.7)
Muthuvan	0 (0.0)	0 (0.0)	54 (36.0)	5 (3.3)	59 (39.3)
Malayarayan Christian	0 (0.0)	0 (0.0)	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	0 (0.0)	141 (94.0)	9 (6.0)	0 (0.0)	150 (100.0)
Irular	0 (0.0)	124 (82.7)	0 (0.0)	0 (0.0)	124 (82.7)
Mudugar	0 (0.0)	17 (11.3)	9 (6.0)	0 (0.0)	26 (17.3)

Source: Primary data

In Wayanad district, 62 per cent of tribes' water is available outside of their dwelling, but within the premises, i.e. they need not walk long distance for their water collection. This includes 36 per cent of Adiyas, 15.3 per cent of Paniyas, 10.7 per cent of Kurichyars are getting water outside the dwelling, but within the premises. 21.3 per cent of them reported that they need to walk daily less than one km for water availability. This includes 11.3 per cent of Kattunaikyans and 10 per cent of Uralikurumar community. And 16.7 per cent of Kattunaikyans tribes needed to walk 1-2 km for the availability of water.

Whereas 96.7 per cent of tribes in Idukki district need to walk one km-two km daily for collecting water and this shows a very pathetic situation. 42.7 per cent of Mannans, 36 per cent of Muthuvans, 18 per cent of Malayarayans need to walk one km to two km for collecting drinking water. 3.3 per cent of Muthuvan tribes in the district reported that they need to walk two km-five km for their daily water collection.

In Palakkad district, 94 per cent of tribes need to walk less than one km for their daily water collection. 82.7 per cent of Irular and 11.3 per cent of Mudugars have to walk one km and remaining six per cent of Mudugars need to walk one km-two km for their daily water collection.

Table 6.16
Quality of water

Tribal communities	Satisfactory	Total
Wayanad	150 (100.0)	150 (100.0)
Adiya	54 (36.0)	54 (36.0)
Kattunaikyan	42 (28.0)	42 (28.0)
Paniya	23 (15.3)	23 (15.3)
Kurichyar	16 (10.7)	16 (10.7)
Uralikurumar	15 (10.0)	15 (10.0)
Idukki	150 (100.0)	150 (100.0)
Mannan	64 (42.7)	64 (42.7)
Muthuvan	59 (39.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	27 (18.0)
Palakkad	150 (100.0)	150 (100.0)
Irular	124 (82.7)	124 (82.7)
Mudugar	26 (17.3)	26 (17.3)

Source: Primary data

All the tribes in Wayanad district reported that the quality of water available is almost satisfactory and none of them reported that they are getting good quality water and the situation is similar in the case of Idukki and Palakkad districts.

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7.1 Introduction

Health is the prime concern of an individual. The concept of health cannot be seen in a narrow sense as a state of sheer absence of disease. It should be seen as a broad spectrum where health is viewed as the integral well-being of the individuals (Mathur and Sharma, 1995). The traditional method of measuring health status with indices like mortality rates, particularly infant mortality rates and life expectancy, seems to be outdated today in the context of a holistic perception of health. Recently health status indices encompass, in addition to IMR, variables, such as drinking water, sanitation, morbidity, etc.(Berg 1973, Cemper, 1984).

Kerala has made remarkable achievements with respect to mortality and fertility. The level of morbidity is reported to be high and this triggered a debate on the low mortality and high morbidity syndrome in Kerala. (Navaneetham et al.,2006). Kerala's achievements have not been uniform across geographical locations of the State and have also eluded some of the marginalised sections like fishermen and tribals (Shyjan, 2000, Vimalakumari,1991). Another study noted the disparity in health status among socio-economic groups, defined in terms of income, education, land ownership and housing and concluded that better health status is associated with higher socio economic status and that the level of morbidity of the poor was 40 per cent higher than the level of better off (Kannan et al., 1990). The

risk of morbidity is determined by the individual and household characteristics like age, education, caste, religion and socio-economic status as well as environmental and community level characteristics. The effect of these characterises on morbidity may vary according to the level of access to and availability of health care services (Navaneetham et al., 2006).

The present study tries to analyse the health status of tribal communities with the help of household characteristics. Health status is the central element in the socio-economic profile of the community. An individual can learn work effectively and efficiently only if one is healthy (Rajasenan et al., 2013). Intrinsic and instrumental values are attached with a healthy individual who is able to live long (Sen,1998). It has been found that the health status of tribals is not so robust as they are very much below the State average in terms of most of the health indicators of morbidity, mortality, infant mortality and other demographic features. This is because of their peculiar habits like drinking and use of tobacco (Kannan et al.,1991). Sengupta Keya (2016) in the study mentioned that there is no single index for measuring the health status of a country or population as it is a multi-dimensional concept. In the absence of such an index, we use a number of indicators to represent health status. There is no comprehensive or absolute measure to assess the health status of a population.

Table 7.1
Results of Stepwise Discriminant Analysis.

Step	Number of variables	Wilks lambda	df	F	P value
1	Deprivation score	0.661	440.00	25.098	0.000
2	Acute illness	0.591	440.00	14.670	0.000
3	Chronic illness	0.527	440.00	11.626	0.000

The information provided in table 7.1 to table 7.2 summarizes the steps of ten tribes' discriminant analysis (Refer table 6.3) with the following results. Variables like Deprivation score, acute illness and chronic illness are included in the final

discriminant function. Discrimination increased with the addition of each variable, which is evident from the declining lambda value (table 7.1)

Table 7.2
Variables in the Analysis

Variables	Tolerance	F to Remove	Wilk's Lambda
Deprivation score	0.865	20.691	0.751
Acute illness	0.755	8.544	0.619
Chronic illness	0.690	5.917	0.591

The overall model fit is statistically significant and all variables to be included in the function have significantly higher values of F to remove. (Table 7.2).

Table 7.3
Summary of Canonical Discriminant Functions

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation	Wilks' Lambda	Chi-square	df	Sig
1	.553a	72.1	72.1	.597	.527	283.475	27	.000*
2	.172a	22.4	94.5	.383	.818	88.663	16	.000*
3	.042a	5.5	100.0	.202	.959	18.371	7	.012

(Inference drawn from discriminating analysis is validated at one per cent level)

Among the three functions used in the analysis, the first two functions are statistically significant (Table 7.3). The values of Wilk's lambda are relatively low and statistically significant at one per cent level. The Lambda value of third function is not found significant at one per cent level. The first and second functions respectively account for 72.1 per cent and 22.4 per cent of the variance, explained by the three functions, contributing to the third function which is negligible and is not considered for further procedures.

The total amount of variance explained by the first functions is $(0.597)^2$, that is 35.6 per cent, while the second function explains $(0.383)^2$ or 14.6 per cent of the remaining variance 64.4 per cent that comes to 9.4. Consequently two functions together could explain 45 per cent of the total variance among tribe communities.

Table 7.4
Standardized Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Deprivation score	.915	-.565	.007
Chronic illness	.069	.954	.731
Acute illness	.328	1.017	-.426

Table 7.5
Structure Matrixes

	Function		
	1	2	3
Deprivation score	.954*	-.223	.201
Chronic illness	.193	.325	.926*
Acute illness	.348	.554	-.756*

The interpretation of earlier results is supported by standardized discriminant functions coefficients and structure matrix reported in table 7.4 and table 7.5 respectively. The standardized coefficients indicate a large coefficient for deprivation score, whereas Function 2 has large coefficient for acute illness and chronic illness. Function 3 has a large coefficient for chronic illness. Analysis of structure matrix also helps to make a similar conclusion.

Table 7.6
Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Deprivation score	.157	-.097	.001
Chronic illness	.020	.277	.212
Acute illness	.084	.259	-.108
(Constant)	-3.987	-.489	-.383

Unstandardized coefficients

Table 7.6 provides the discriminant weights of three variables and the tribal community means. On looking into tribe community means, the first function primarily distinguishes Kattunaikyan community's mean deprivation score from other tribe communities. The second function also discriminates Kattunaikyan community from other tribes in terms of acute illness and chronic illness. However

marked differences could be observed between deprivation score, chronic illness and acute illness among various tribe communities. The second function also separates deprivation scores from chronic illness and acute illness. Therefore, we can form an impression that functions are almost the same in their capacity to discriminate the tribal communities under study.

Table 7.7
Association between Mean Deprivation Score and Variables: Chi- square Analysis

Variables	Chi square value	P value
Tribes	9.016	0.000*
District	2.135	0.000*
Chronic illness	2.315	0.000*

The table 7.7 shows that tribal communities have significant relationship with mean deprivation of the respective household. As the p value shows a significant level of 0.000* and chi- square shows a value of 9.016, there exist significance differences among mean deprivation among the various tribe communities included in the study. District-wise analysis reported a significance level of 0.000* and their respective chi- square value is 2.135. This also shows that there exist district wise differences in deprivation among various tribal communities. Chronic illness and mean deprivation score of each household shows 0.000* significance level. This also pointed out that there exist considerable differences among various tribal communities and their chronic illness.

Table 7.8
Association between Tribe and Morbidity: Chi- square analysis

Variables	Chi square value	P value
Acute illness	1.322	0.000*
Chronic illness	46.185	.012

The table 7.8 shows that acute illness and tribes have significant relation showing p value of 0.000*. This shows that there exist considerable differences in

acute illness suffered by various tribal communities included in the study. And chronic illness shows p value of 0.012.

Table 7.9
Association between District and Morbidity: Chi-square analysis

Variables	Chi square value	P value
Acute illness	39.051	0.000*
Chronic illness	11.536	.073

District wise analysis and acute illness show that there exist considerable differences among three districts included in the study having a p value of 0.000*

7.2 To Analyse Health Status of Tribal Population

The primitive tribes have distinct health problems, mainly governed by multi-dimensional factors like their habitat, difficult terrain, ecologically variable niches, illiteracy, poverty, isolation, superstition and deforestation (ICMR, 2003). Health status of an individual is determined by factors, such as personal, social, economic and environmental. Personal factors include drinking and smoking. Social factors such as education, age, gender are significant just as economic conditions, like poverty are significant. The present study used seven variables to determine the health status of tribes and they are education, age, censored deprivation score of each household, female in the household, daily calorie intake of each household, drinking water, and morbidity. The highest education in the household, highest age group in the household, mean censored deprivation score of the household, percentage of females in the household, highest daily calorie intake in the household, drinking water source and average morbidity reported in the household are taken up for the study. The present study used factor analysis technique to analyse the health status of tribal population.

7.2.1 Factor analysis

Exploratory Factor Analysis (EFA) is a frequently used multivariate analysis technique bidding to expose a simple underlying structure assumed to exist within a set of multivariate observations (Hair et al., 2012). The structure is expressed in terms of variances and co-variances between variables and similarities between observations, based on which we reduce the number of variables into a specific number of factors. The rationale behind the use of this methodology in this research is to make logical investigation of the variables that can co-move with health status. Such information definitely helps us to detect the causes explained by health status.

Generally, we use two forms of factor analysis, 'R' mode and 'Q' mode techniques and both utilize a correlation matrix as the basic data input. 'R' mode techniques deliberates interrelation between variables and similarities operated by extracting Eigen values and Eigen factors from a covariance or correlation matrix whereas 'Q' mode analysis extracts Eigen values and Eigen factors from a matrix of similarities between all possible pairs of objects. 'R'-mode techniques are statistical procedures and we follow this mode for our analysis. Eigen values greater than 1 are taken as the base for factor determination.

7.2.2 Correlation Among Health Status Determinants

The underlying statistical assumptions influence factor analysis to the extent that they affect the derived correlations. Hence, at first we should make a visual examination of the correlations to identify the statistically significant relations. Table 7.10 reports the inter relationship existing among different variables included in the study. We can observe negative correlations between variables in many cases and the relationship is weak in most observations. However, the variable age, holds significant positive correlations (although not very strong) with other variables like education, deprivation score, female and morbidity. Similar observations can make with regard to education and deprivation; deprivation and morbidity. Statistically significant inverse relations exist between age and calorie, deprivation and drinking

water. Among these, correlation between deprivation and drinking water is relatively at a larger rate. When we deduce these findings on correlations specifically to the study's focus, i.e., health status and its determinants, we can infer that the three variables- education, age and deprivation -can be possible predictors of health status among the tribal communities.

Table 7.10
Rotated Component Matrix^a

	Component		
	1	2	3
Education	.060	-.766	.233
Age	.271	-.011	.692
Deprivation	.805	-.177	.207
Female	.176	.078	-.799
Calorie	-.804	.088	.209
Drinking water	-.106	.796	.076
Morbidity	.418	.340	.234

Extraction Method: Principal component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 5 iterations.

7.2.3 Suitability of Model

We determine the suitability of our sample for performing factor analysis using Kaiser –Meyer – Olkin (KMO) test of sample adequacy and Bartlett's test of sphericity. The KMO statistic reported in table 7.11 denotes the ratio of the squared correlation between the variables to their squared partial correlations. The KMO statistic varies between 0 and 1 and values greater than 0.5 is acceptable (Kaiser, 1974). In our case, the value is 0.523; hence, we assume the appropriateness of the sample for the proposed exploratory factor framework.

Table 7.11
KMO and Bartlett's Test of sphericity

KMO measure of Sampling Adequacy.	Bartlett's Test of Sphericity (Approx. chi square value)	p value
0.523	293.877	0.000*

*Significant at one per cent level

Bartlett's measure tests the null hypothesis that the original correlation matrix is an identity matrix. If the correlation matrix were an identity matrix, all correlation coefficients would be zero. For the factor analysis to work there should be some relationship between the variables and the correlation matrix should not be an identity matrix. The statistical significance of Bartlett's test value ($p < 0.001$) reveals the overall significance of correlations in the matrix and there are sufficient correlations exist among the variables to proceed.

7.2.4 Extraction of Factors

After testing the adequacy of the data and the explanatory variables, we administer factor analysis using Principal Component Analysis (PCA) method among the selected health status variables to identify the underlying structure of relationship. Since data reduction is our primary concern, focusing on minimal number of factors needed to account for the maximum portion of the total variance explained in the original set of data, PCA method is appropriate for this study (see Hair et al., 2012, p.142). Literature suggests several procedures to determine the number of factors that we need to represent the variables under observation. Determination based on Eigen values and percentage of variance is most versatile in this regard. The Eigen values associated with each factor represent the variance explained by that particular linear component.

One should consider the factors having Eigen values greater than unity as significant and must retain them for further inference and interpretation (Kaiser,

1974). Moreover, the number of factors extracted should account for a satisfactory level (at least 60 per cent in social sciences) of the total variance (see Malhotra and Dash, 2011, p. 595). Based on these criteria, we have extracted three factors from the data, which altogether make up 61.275 per cent of the total variance.

Factor matrix contains the coefficients that we use to define the standardized financial variables in terms of factors. Through rotation, we transform the factor matrix into a form that enables us to make simple and easy interpretations. We have used Component Transformation Matrix of factor rotation that minimizes the number of variables with high loadings on a factor thereby enhancing the interpretability of factors (see Malhotra and Dash, 2011, p. 597).

Table 7.12
Component Transformation Matrix

Component	1	2	3
1 (Education)	.780	-.492	.386
2 (Age)	.626	.613	-.482
3 (Deprivation)	.000	.617	.787
Eigen values	1.782	1.287	1.220
Variance explained %	25.456	18.388	17.431
Cumulative %	25.456	43.844	61.275

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

The ongoing discussions stem out from the information embedded in the rotated factor matrix (Table 7.12). The ultimate aim is to identify the health status variable in the health status of tribal population.

Factor 1: Education: This factor consists of education and health status of tribal population and is positively loaded and establishes education has strong relationship with health status of tribe population .Total Eigen value at 1.782 in the table 7.12

Factor 2: Age: This factor consists of age and health status of tribal population and has total Eigen value greater than unity at 1.287 as shown in the table 7.12. Age has strong relationship with health status of tribal population.

Factor 3: Deprivation score: This factor consists of deprivation and health status of tribal population and its total Eigen value is greater than unity at 1.220 in the table 7.12. This shows that deprivation and health status of tribal population have a positive relationship.

From this analysis, we can infer that among the seven variables used in the analysis three variables - education, age and deprivation- are the extracted factors that influence health status. Their total Eigen values are greater than unity and their number of factors extracted should account for a satisfactory level as 61.275 per cent of the total variance.

7.3 To Identify Nature, Pattern and Causes of Morbidity among Tribal Communities

The survey data shows that the nature and pattern of diseases shows certain similarities and dissimilarities in three districts under study. For the sake of our convenience, diseases in the districts are classified as communicable diseases and permanent illness.

Table 7.13
Communicable diseases among tribes of Wayanad, Idukki and Palakkad district

Tribal communities	Fever	Woufingcough	Cold	Fever,cough &headache	Tubercu losis	Diarrheadisases	Hepatiti s-A	Measles	Total		
										Woufingcough	Cold
Tribal communities Wayanad											
Adiya	30 (66.7)	1 (2.2)	0	4(8.9)	3(6.7)	3 (6.7)	2(4.4)	2(4.4)	45(100.0)		
Kattunaikyan	38 (50)	1(1.3)	0	9(12.0)	10(13.2)	18 (23.6)	0	0	76(100.0)		
Paniya	13 (56.5)	0	1(4.3)	5 (21.8)	0	4 (17.4)	0	0	23(100.0)		
Kurichyar	6 (75)	1(12.5)	1 (12.5)	0	0	0	0	0	8(100.0)		
Uralikurumar	11 (78.7)	0	0	0	1(7.1)	1(7.1)	1(7.1)	0	14(100.0)		
Tribal communities Idukki											
	Fever	Woufing cough	Cold	Tuber- culosis	Diarrhe al Diseases	Typhoid	Measels	Fever & shive ring	Malaria	Pneum onia	Total
Mannan	25 (30.9)	14(17.3)	5 (6.2)	0	29 (35.8)	1 (1.2)	0	2 (2.5)	3 (3.7)	1(1.2)	81 (100.0)
Muthuvan	31 (36.9)	9 (10.7)	7(8.3)	2 (2.4)	16 (19.0)	3 (3.6)	2 (2.4)	4 (4.8)	3(3.6)	4 (4.8)	84 (100.0)
Malayarayan	7 (41.2)	7(41.2)	1 (5.9)	0	0	0	0	0	0	2(11.7)	17 (100.0)
Tribal communities Palakkad											
	Fever	Woufing cough	Cold	Diarrheal diseases	Typhoid	Pneumonia	Fever & cold	Dengue fever	Total		
Irular	1 (13.6)	2(2)	4 (3.6)	38 (34.5)	1(0.9)	4(3.6)	33(30)	4(3.6)	96 (100.0)		
Mudugar	1 (3.8)	0	0	10 (38.5)	0	0	9 (34.6)	4(15.4)	26 (100.0)		

Source: Primary data

Survey data from Wayanad district shows that the highest percentage of communicable diseases is contracted by Kattunaikyan community in Wayanad, followed by Muthuvan community and Mannan community in Idukki district, Irular and Mudugar community in Palakkad district. Lowest per cent of it is reported from Kurichyar community in Wayanad district and Malayarayan community in Idukki district. But the intensity of these diseases is different in each tribal community, which depends upon the availability of related factors. Non availability of water and sanitation facility is the major threat faced by Kattunaikyan community in Wayanad district. Mannan and Muthuvan community in Idukki district depend upon spring for availability of water and pits as their toilets. And they need to travel long distance to collect the water for their domestic consumption. The condition of Irular community and Mudugar community is not as different as they need to travel to collect water from a common pipe. And some of them are sharing their toilets and are using pits for the same. But living conditions are better and spread of communicable diseases is the lowest among Kurichyar community in Wayanad district and Malayarayan community in Idukki district. Moreover educational information regarding health and living conditions among these tribes is much higher than those other tribal communities. Although lack of water availability is a major problem among the Malayarayan community some of them are equipped with better sanitation facilities. All these factors are affected the least spread of communicable diseases among Kurichyar and Malayarayan community.

Table 7.14
Permanent illness among tribes of Wayanad, Idukki and Palakkad district

Tribal communities Wayanad	Rheumatoid Arthritis	Asthma	Epilepsy	Heart disorder		Blind by Birth	Blood pressure		Diabetes	Total		
				Asthma	Epilepsy		Blind by birth	Blood pressure				
Adiya	18 (38.3)	12 (25.5)	4 (8.5)	6 (12.8)	2 (4.3)	5 (10.6)	0	47 (100.0)				
Kattunaikyan	14 (35.9)	18 (46.2)	3 (7.7)	2 (5.1)	0	2 (9.5)	0	39 (100.0)				
Paniya	8 (38.1)	3 (14.3)	6 (28.6)	2 (9.5)	0	5 (33.3)	2 (13.3)	21 (100.0)				
Kurichyar	4 (26.7)	0	4 (26.7)	0	0	2 (9.5)	0	15 (100.0)				
Uralikurumar	10 (47.6)	1 (4.8)	4 (19.04)	4 (19.04)	0	2 (9.5)	0	21 (100.0)				
Tribal communities Idukki	Rheumatoid Arthritis	Asthma	Epilepsy	Heart disorder	Blind by birth	Blood pressure	Mental illness	Deaf & dumb	Deaf	Loss of eye sight	Esnophelia	Total
Mamnan	8 (15.7)	8 (15.7)	4 (7.8)	4 (7.8)	0	11 (21.6)	2 (3.9)	3 (5.9)	3 (5.9)	6 (11.8)	2 (3.9)	51 (100.0)
Muthuvan	16 (23.6)	15 (22)	5 (7.3)	9 (13.2)	4 (5.9)	11 (16.2)	3 (4.4)	1 (1.5)	1 (1.5)	3 (4.4)	0	68 (100.0)
Malayarayan	1 (7.7)	0	0	1 (7.7)	0	5 (38.5)	1 (7.7)	0	0	0	5 (38.5)	13 (100.0)
Tribal communities Palakkad	Rheumatoid Arthritis	Asthma	Epilepsy	Heart disorder	Blood pressure	Diabetes	Mental Illness	Deaf	Loss of eye sight	Ley on bed	Handic aped	Total
Irular	10 (11.6)	27 (31.4)	0	11 (12.8)	20 (23.3)	1 (1.2)	7 (8.1)	2 (2.3)	5 (5.8)	1 (1.2)	2 (2.3)	86 (100.0)
Mudugar	4 (22.2)	6 (33.3)	1 (5.5)	0	19 (5.6)	5 (27.8)	1 (5.6)	0	0	0	0	36 (100.0)

Source: Primary data

The highest percentage of permanent illness was reported from Adiya community, followed by Kattunaikyan community, Paniya community, Uralikurumar community and Kurichyar community in Wayanad district. In Idukki district, the highest percentage of the same illness is reported by Muthuvan community, followed by Mannan community and Malayarayan community. And in Palakkad, highest percentage is reported by Irular community. Rheumatoid arthritis, asthma, epilepsy, heart disorder, blood pressure are common illnesses which are reported in three districts. Rheumatoid arthritis which is related to pains of joints and bones is reported the highest among the tribal communities in Wayanad followed by Idukki and Palakkad districts. Asthma is reported highest by Kattunaikyan community, followed by Mudugar community, Irular community, Muthuvan community and Mannan community. It is reported the lowest by Uralikurumar community and not reported by Kurichyar community and Malayarayan community. Heart disorders, blood pressure and diabetics are reported the highest by Kurichyars, whereas epilepsy is reported the highest in the Paniya community in Wayanad district. But Idukki district and Palakkad district also witnessed other diseases, such as mental illness, deafness, deafness and dumbness, loss of eye sight and blindness by birth. Blood pressure and eosinophilia are reported the highest among Malayarayan community and Mannan community. Mannan community also reported blood pressure, deafness and dumbness and loss of eye sight. But cases of being handicapped and bed ridden are reported from Palakkad district only.

Another, notable disease reported from among tribes in Wayanad and Palakkad district is genetic disorder. Sickle cell anaemia is one of the genetic disorder diseases reported during the period. According to the Thirunelli grama panchayat report (2013), 57.1 per cent of sickle cell anaemia is reported from among Adiya community, 19.6 per cent is reported from Kattunaikyan community, 17.9 per cent is reported from Uralikurumar community, 3.6 per cent from Paniya community and 1.8 per cent from Kurichyar community. A survey conducted by Sickle Cell

Disease project in Attapadi by Dr. Prabhudas, Nodal officer for Health Services in Attappadi and Deputy District Medical Officer said that sickle cell disease project in Attappadi found out over 20 per cent of the 33,120- strong tribal population are affected by the dreaded genetic disorder of sickle cell anaemia. The latest survey conducted in June 2013 by the Agali Community Health Centre and the five Public Health Centres found 1,253 tribals affected by sickle cell anemia. Out of this, 96 are acute cases. He said that at least 20 per cent of the tribal population are under the grip of this genetic disorder. Varieties of diseases reported from Idukki district include appendicitis, and infection of urinary system which are reported the highest by Muthuvan community. Skin diseases, piles and renal diseases are other types of ailment suffered by Malayarayan community. Diseases like urinary infection, bone-related disorders, eye-related problems, vomiting, snakebite are reported from among Irular community and bone-related diseases are common for both Irular and Mudugar community in Palakkad district. Some tribes in Palakkad of both Irular and Mudugar community reported more than one illness for the same person during the survey period. Bone related diseases are common in both the communities together with other diseases like allergy, cough, asthma and, back pain.

To identify reasons of the morbidity pattern it is essential to include the socio economic character of tribes in the study area. A study conducted about socio-economic problems of tribal communities in Udayagiri Panchayat of Kannur district (K.V.Pavithran and Biju Abraham, 2005) reported that it can be effectively addressed only by providing necessary infrastructure and educational facilities, adequate source of livelihood, healthcare and other basic facilities. Available information from the survey data shows that reasons for the spread of communicable diseases are common in Wayanad, Idukki and Palakkad district in Kerala. Living conditions of tribes including housing and environmental conditions, lack of sanitation and water availability, lower calorie intake leading to malnutrition, absence of proper educational and health care facilities are major factors responsible for the spread of communicable diseases in these areas. As far as tribes are

concerned, a good per cent of tribal communities do not complete even primary school education. More than 40 per cent of the tribal communities in Attapadi viz. Irulas, Mudugar, and Kurumbars still remain illiterate (Velluva, 2004). To garner more information regarding the intensity of diseases, it is essential to link age structure and morbidity among the tribes. From the survey data, it is clear that permanent illnesses are reported the highest under the age group of 61-75 and 46-60 years. Permanent illnesses are reported from age group 46-75. The situation is not true in the case of sickle-cell anaemia, although the disease is permanent, but it is regarded as genetic disorder diseases. According to the sample survey, permanent illness no one in any of the districts has crossed the age of 75 years. The highest per cent of illness is reported from Wayanad in this category above 61 years, 98.5 per cent under the age group of 46-60 years. Followed by Idukki 100 per cent of same illness is reported under the age group of 61-75 and 46-60 years. Permanent illness reported in Palakkad district is 96 per cent under the age group of 61-75 years and 46-60 years. But, in the case of communicable diseases, the situation is different, as it is most suffered by children below 15 years of age in three districts.

Table 7.15
Age wise distribution of Morbidity

Wayanad	Communicable diseases	Non communicable diseases (permanent illness)	Total
Up to 15 years	156(84.8)	28(15.2)	184(100.0)
16-30 years	6(26.0)	17(74.0)	23(100.0)
31-45 years	3(8.8)	31(91.2)	34(100.0)
46-60 years	1(1.5)	67(98.5)	68(100.0)
61-75 years	0(0)	3(100.0)	3(100.0)
Idukki			
Up to 15 years	175(86.2)	28(13.8)	203(100.0)
16-30 years	2(10.0)	18(90.0)	20(100.0)
31-45 years	5(8.6)	53(91.4)	58(100.0)

46-60 years	0(0)	46(100.0)	46(100.0)
61-75 years	0(0)	29(100.0)	29(100.0)
Palakkad			
Up to 15 years	124(90.5)	13(9.5)	137(100.0)
16-30 years	3(14.3)	18(85.7)	21(100.0)
31-45 years	6(14.3)	36(85.7)	42(100.0)
46-60 years	2(4.0)	48(96.0)	50(100.0)
61-75 years	1(4.0)	24(96.0)	25(100.0)

Source: Primary data

And the intensity of it is the highest in Palakkad, followed by Idukki and Wayanad districts. Another factor which can be related to morbidity is lower calorie and iron consumption leading to malnutrition and anaemia. Lack of cleanliness coupled with malnutrition and anemia increases intensity of communicable diseases in three districts. As the highest percentage of it is reported under calorie intake ranging between 500 -1000 Kcalories in three districts and in terms of low calorie range communicable diseases is reported highest in Idukki district followed by Palakkad and Wayanad. Gender wise classification shows that communicable diseases are most affected by females rather than males tribes in the society. This may be due to lack of sufficient food intake leading to malnutrition and anemia. Their family atmosphere will favourably affect the males as they are regarded as the main source of income earners.

Table 7.16
Mean daily calorie intake

Tribal communities	Male(Average Calorie)	Female (Average Calorie)
Wayanad	1423	1274
Adiya	1416	1268
Kattunaikyan	1284	1179
Paniya	1392	1198
Kurichyar	1809	1689
Uralikurumar	1426	1275
Idukki	1533	1348
Mannan	1465	1334
Muthuvan	1507	1299
Malayarayan Christian	1725	1562
Palakkad	1422	1245
Irular	1401	1237
Mudugar	1515	1287

Source: Primary data

It is evident from the table that there exist wide disparities in the average calorie intake of male and female tribes in three districts. Owing to the peculiarity of their food consumption, both genders may not get the required calorie. But the intensity of the lowest calorie consumption is the highest for female tribals, compared to their male counterparts. Female tribals from Kattunaikyan community reported the lowest average calorie consumption and the highest calorie consumption is reported by females in Kurichyar tribe. Food expenditure of the tribal family can also be connected to the morbidity in tribal areas. Land alienation problem badly affected the nutritional status of tribes in Wayanad, Idukki and Palakkad districts. Nature and dimension of land alienation patterns vary in these districts (Rajasenan

¹ Calorie calculation = Nutritive value

$$\frac{\text{-----}}{100} \times \text{Amount consumed}$$

Iron calculation = Nutritive value

$$\frac{\text{-----}}{100} \times \text{Amount consumed}$$

and Nikitha, 2013) pointed out that family-wise land alienation is severe in Palakkad, area-wise land alienation in Idukki and non-tribal migration in search of land for agriculture activities and plantation purpose were the main reasons in Wayanad district. Food intake and its quality determine levels of nutritional attainment. Food habits of the tribes are different from those of other people. They cultivate their land based on their food habits. This helps them for maintaining health and nutritional security. Recent changes in land alienation have resulted in reduced food consumption among tribes, both quantitatively and qualitatively. The conversion of tribes from owners of land to agricultural workers with wage rate below subsistence level has made the situation shocking with high levels of morbidity and mortality (Rajasenan and Nikitha, 2013). High levels of infant mortality and nutrition linked disability among pregnant women in Attapadi during 2013 are classic issues that resulted from poverty, landlessness and neglect. The majority of tribes in the district are agricultural laborers and it is striking that their monthly food expenditure in Wayanad district, 89.3 per cent of tribes' household food expenditure is reported as less than Rs.500, only 2.7 per cent of Kurichyar community's monthly food expenditure ranges between Rs.500-Rs.1000, remaining 8 per cent of Kurichyar community's monthly food expenditure ranges between Rs.1000-Rs.1500. In Idukki district 52 per cent of tribes' food expenditure is reported as less than Rs.500, 36 per cent of tribal households' food expenditure ranges between Rs.500-Rs.1000 and the remaining 12 per cent of Malayarayan community's food expenditure ranges between Rs.1000-Rs.1500. In Palakkad district 97.3 percent of tribes' food expenditure is less than Rs.500, only 2.7 per cent of Irular tribes' monthly food expenditure ranges between Rs.500-Rs.1000, except Kurichyar community in Wayanad and Malayarayan community in Idukki district. The rest of tribal community consume less than Rs.500 for monthly food expenditure and they spend major the portion of their monthly expenses to medical and other expenditure that also includes alcohol and tobacco consumption. Sickle cell anaemia is one of the genetic disorder diseases reported among the tribal communities. According to the data obtained from Thirunelli Grama panchayat

office, incidence of sickle cell anemia is very low among people who are above 50 years and sickle cell anaemia is more prevalent among the females.

7.4 Living Practices Influence Health Aspects of Tribal Community

Good living practices are essential for proper health status of an individual. In order to know how living practices influence health aspects of the tribal community following aspects are analysed.

Table 7.17
Incidence of Smoking

Tribal communities	Use of Cigarettes		Total
	Yes	No	
Wayanad	203 (28.0)	522 (72.0)	725 (100.0)
Adiya	65 (9.0)	180 (24.8)	245 (33.8)
Kattunaikyan	56 (7.7)	155 (21.4)	211 (29.1)
Paniya	31 (4.3)	79 (10.9)	110 (15.2)
Kurichyar	19 (2.6)	61 (8.4)	80 (11.0)
Uralikurumar	32 (4.4)	47 (6.5)	79 (10.9)
Idukki	210 (28.1)	538 (71.9)	748 (100.0)
Mannan	92 (12.3)	218 (29.1)	310 (41.4)
Muthuvan	82 (11.0)	232 (31.0)	314 (42.0)
Malayarayan Christian	36 (4.8)	88 (11.8)	124 (16.6)
Palakkad	322 (46.1)	377 (53.9)	699 (100.0)
Irular	268 (38.3)	312 (44.6)	580 (83.0)
Mudugar	54 (7.7)	65 (9.3)	119 (17.0)

Source: Primary data

Smoking is prevalent among the tribal households. Nearly 34 per cent are smokers. In Palakkad nearly 46 per cent are using cigarettes, whereas in Idukki and Wayanad is only 28 per cent. More than 38 per cent from Irular community are smokers and it is the highest when compared to other communities. The low reporting of smokers in districts may be due to under reporting – now many are aware of evils of smoking.

Table 7.18
Use of Alcohol or other intoxicants

Tribal communities	Use of alcohol or other intoxicant		Total
	Yes	No	
Wayanad	203 (28.0)	522 (72.0)	725 (100.0)
Adiya	64 (8.8)	181 (25.0)	245 (33.8)
Kattunaikyan	57 (7.9)	154 (21.2)	211 (29.1)
Paniya	31 (4.3)	79 (10.9)	110 (15.2)
Kurichyar	19 (2.6)	61 (8.4)	80 (11.0)
Uralikurumar	32 (4.4)	47 (6.5)	79 (10.9)
Idukki	207 (27.7)	541 (72.3)	748 (100.0)
Mannan	92 (12.3)	218 (29.1)	310 (41.4)
Muthuvan	80 (10.7)	234 (31.3)	314 (42.0)
Malayarayan Christian	35 (4.7)	89 (11.9)	124 (16.6)
Palakkad	445 (63.7)	254 (36.3)	699 (100.0)
Irular	364 (52.1)	216 (30.9)	580 (83.0)
Mudugar	81 (11.6)	38 (5.4)	119 (17.0)

Source: Primary data

Incidence of drinking alcohol is high among the people, more than 52 per cent use alcohol regularly. The highest per cent is in Palakkad (nearly 64 per cent) in other districts it is above 25 per cent. Among communities more than 52 per cent are from alcoholism.

Table 7.19
Water Consumption

Tribal communities	Boiled water used for consumption			Total
	Yes	No	Rare	
Wayanad	21 (14.0)	28 (18.7)	101 (67.3)	150 (100.0)
Adiya	4 (2.7)	1 (0.7)	49 (32.7)	54 (36.0)
Kattunaikyan	0 (0.0)	15 (10.0)	27 (18.0)	42 (28.0)
Paniya	1 (0.7)	12 (8.0)	10 (6.7)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	28 (18.7)	36 (24.0)	86 (57.3)	150 (100.0)
Mannan	0 (0.0)	18 (12.0)	46 (30.7)	64 (42.7)
Muthuvan	1 (0.7)	18 (12.0)	40 (26.7)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	0 (0.0)	27 (18.0)
Palakkad	5 (3.3)	48 (32.0)	97 (64.7)	150 (100.0)
Irular	5 (3.3)	39 (26.0)	80 (53.3)	124 (82.7)
Mudugar	0 (0.0)	9 (6.0)	17 (11.3)	26 (17.3)

Source: Primary data

Only 14 per cent of tribes in Wayanad reported that they are used for boiled water for their consumption. It include tribes, such as 2.7 per cent of Adiyas, 10.7 per cent of Kurichyars, 0.7 per cent of Paniyas. 18.7 per cent have reported that they are not using boiled water for their consumption. Tribes, such as 10.7 per cent of Kattunaikyans, 8 per cent of Paniyas, 0.7 per cent of Adiyas are included in this category. 67.3 per cent have reported that they are rarely using boiled water for consumption. It includes tribes, such as 32.7 per cent of Adiyas, 18 per cent of Kattunaikyans, 10 per cent of Uralikurumars and 6.7 per cent of Paniyas.

In the case of Idukki, 18.7 per cent are using boiled water for their consumption. Tribes, such as 18 per cent of Malayarayans, and 0.7 per cent of

Muthuvans are included in this. 24 per cent has reported that they are not using boiled water for their consumption. It includes 12 per cent of Mannans and 12 per cent of Muthuvans. 57.3 per cent has reported that they are rarely consuming boiled water for their day to day life. 30.7 per cent of Mannans and 26.7 per cent of Muthuvans are included in this category.

In Palakkad district, only 3.3 per cent of Irular tribes reported that they are consuming boiled water, 32 per cent reported that they are not using boiled water for their consumption. Tribes such as 26 per cent of Irular and 6 per cent of Mudugar are included in it. 64.7 per cent reported that they are rarely using boiled water for their consumption. And that includes tribes such as 53.3 per cent of Irular and 11.3 per cent of Mudugars.

Out of the total samples collected for the study, only 36 per cent tribes are using boiled water for their consumption. This behavioral approach spurred the spread of communicable diseases among them.

Table 7.20
Bath room Facility of tribal households

Tribal communities	Bathroom		Total
	Yes	No	
Wayanad	65 (43.3)	85 (56.7)	150 (100.0)
Adiya	35 (23.3)	19 (12.7)	54 (36.0)
Kattunaikyan	12 (8.0)	30 (20.0)	42 (28.0)
Paniya	2 (1.3)	21 (14.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	27 (18.0)	123 (82.0)	150 (100.0)
Mannan	0 (0.0)	64 (42.7)	64 (42.7)
Muthuvan	0 (0.0)	59 (39.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	82 (54.7)	68 (45.3)	150 (100.0)
Irular	69 (46.0)	55 (36.7)	124 (82.7)
Mudugar	13 (8.7)	13 (8.6)	26 (17.3)

Source: Primary data

43.3 per cent of tribal households surveyed in Wayanad district reported that they have bathrooms while the remaining 56.7 per cent tribal households have no bath room facility. The highest per cent of households not using bathrooms are reported from Kattunaikyan tribe ie 20 per cent, followed by 14 per cent of Paniyas, 12.7 per cent of Adiyas and 10 per cent of Uralikurumars.

In Idukki district only 18 per cent of Malayarayans tribes are using bath room facility, the remaining 82 per cent reported that there is no bathroom for them. In Palakkad district, 54.7 per cent have reported availability of bathroom facility while the remaining 45.3 per cent have reported that there is no bathroom facility.

Table 7.21
Type of Bath room

Tribal communities	Bathroom attached		Total
	Detached	No Bathroom	
Wayanad	65 (43.3)	85 (56.7)	150 (100.0)
Adiya	35 (23.3)	19 (12.7)	54 (36.0)
Kattunaikyan	12 (8.0)	30 (20.0)	42 (28.0)
Paniya	2 (1.3)	21 (14.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	27 (18.0)	123 (82.0)	150 (100.0)
Mannan	0 (0.0)	64 (42.7)	64 (42.7)
Muthuvan	0 (0.0)	59 (39.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	82 (54.7)	68 (45.3)	150 (100.0)
Irular	69 (46.0)	55 (36.7)	124 (82.7)
Mudugar	13 (8.7)	13 (8.6)	26 (17.3)

Source: Primary data

It is to be noted that all tribes are using detached bathroom facility. Another important point to be noted is that 56.7 per cent of households in Wayanad, 82 per cent of households in Idukki district and 45.3 per cent of tribe households in Palakkad district do not have bath rooms in their households.

Table 7.22
Place of bath

Tribal communities	Where you take bath					Total
	Bathroom	Community Taps	Open Space	Rivers	Other facilities	
Wayanad	53 (35.3)	0 (0.0)	40 (26.7)	0 (0.0)	57 (38.0)	150 (100.0)
Adiya	35 (23.3)	0 (0.0)	8 (5.3)	0 (0.0)	11 (7.3)	54 (36.0)
Kattunaikyan	0 (0.0)	0 (0.0)	13 (8.7)	0 (0.0)	29 (19.3)	42 (28.0)
Paniya	2 (1.3)	0 (0.0)	4 (2.7)	0 (0.0)	17 (11.3)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	0 (0.0)	15 (10.0)	0 (0.0)	0 (0.0)	15 (10.0)
Idukki	27 (18.0)	0 (0.0)	0 (0.0)	0 (0.0)	123 (82.0)	150 (100.0)
Mannan	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	64 (42.7)	64 (42.7)
Muthuvan	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	59 (39.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	27 (18.0)
Palakkad	5 (3.3)	0 (0.0)	0 (0.0)	48 (32.0)	97 (64.7)	150 (100.0)
Irular	5 (3.3)	0 (0.0)	0 (0.0)	48 (32.0)	71 (47.3)	124 (82.7)
Mudugar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	26 (17.3)	26 (17.3)

Source: Primary data

Only 35.3 per cent of tribal households in Wayanad district are using bathroom. Even though they have bathroom facility, they are very much reluctant to use this. This helps us to realize their behavior. 26.7 per cent reported that they are using open space for bath remaining 38 per cent using others.

In the case of Idukki district, 18 per cent Malayarayan tribal households are using bath room for their bath, remaining 82 per cent are using others for their bath. In Palakkad district, it is interesting to note that 54.7 per cent of tribes have detached bathrooms, but only 3.3 per cent of Irular tribal households are using this facility. 32

per cent depend upon rivers and 64.7 per cent households are using other facilities for their bath.

Table 7.23
Latrine facility

Tribal communities	Latrine facility available		Total
	Yes	No	
Wayanad	65 (43.3)	85 (56.7)	150 (100.0)
Adiya	35 (23.3)	19 (12.7)	54 (36.0)
Kattunaikyan	12 (8.0)	30 (20.0)	42 (28.0)
Paniya	2 (1.3)	21 (14.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	27 (18.0)	123 (82.0)	150 (100.0)
Mannan	0 (0.0)	64 (42.7)	64 (42.7)
Muthuvan	0 (0.0)	59 (39.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	79 (52.7)	71 (47.3)	150 (100.0)
Irular	66 (44.0)	58 (38.7)	124 (82.7)
Mudugar	13 (8.7)	13 (8.6)	26 (17.3)

Source: Primary data

The availability of sanitation facility is an important determinant of the health status of the people. It has a vital role in providing a healthy environment to the people residing in a particular area. Only 43.3 per cent of tribal households in Wayanad have latrine facility, 56.7 per cent have no latrine facility.

Only 18 per cent of Malayarayan tribal households in Idukki district have latrine facility. The remaining 82 per cent have no latrine availability. In Palakkad district, 52.7 per cent households have latrine facility, 47.3 per cent have no latrine facility.

Table 7.24
Type of latrine used

Tribal communities	Type of latrine used			Total
	Private Latrine	Community Latrine	Pit	
Wayanad	61 (40.7)	4 (2.7)	85 (56.6)	150 (100.0)
Adiya	32 (21.3)	3 (2.0)	19 (12.7)	54 (36.0)
Kattunaikyan	12 (8.0)	0 (0.0)	30 (20.0)	42 (28.0)
Paniya	1 (0.7)	1 (0.7)	21 (14.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	0 (0.0)	15 (10.0)	15 (10.0)
Idukki	27 (18.0)	0 (0.0)	123 (82.0)	150 (100.0)
Mannan	0 (0.0)	0 (0.0)	64 (42.7)	64 (42.7)
Muthuvan	0 (0.0)	0 (0.0)	59 (39.3)	59 (39.3)
Malayarayan Christian	27 (18.0)	0 (0.0)	0 (0.0)	27 (18.0)
Palakkad	12 (8.0)	7 (4.7)	131 (87.3)	150 (100.0)
Irular	12 (8.0)	7 (4.7)	105 (70.0)	124 (82.7)
Mudugar	0 (0.0)	0 (0.0)	26 (17.3)	26 (17.3)

Source: Primary data

In Wayanad, 40.7 per cent households are using private latrine, 2.7 per cent are using community latrine, 56.6 per cent are using pits. Except Kurichyar tribes the rest are still using pits as their toilets. This affected the health status of tribes. It includes 20 per cent of Kattunaikyans, 14 per cent of Paniyas, 12.7 per cent of Adiyas and 10 per cent of Uralikurumars.

In Idukki district 18 per cent households are using private latrine, the remaining 82 per cent are using pits. Both Mannans and Muthuvans in this district are using pits as their bathrooms. In the Palakkad district eight per cent are using private latrine, 4.7 per cent are using community latrine, remaining 87.3 per cent are using pits. 70 per cent of Irulars and 17.3 per cent of Mudugars are using pit.

Table 7.25
Condition of latrine

Tribal communities	Condition of latrine				Total
	Hygenic	Not Hygenic	Lack of Water	Other facilities	
Wayanad	32 (21.4)	94 (62.6)	16 (10.7)	8 (5.3)	150 (100.0)
Adiya	16 (10.7)	26 (17.3)	4 (2.7)	8 (5.3)	54 (36.0)
Kattunaikyan	0 (0.0)	30 (20.0)	12 (8.0)	0 (0.0)	42 (28.0)
Paniya	0 (0.0)	23 (15.3)	0 (0.0)	0 (0.0)	23 (15.3)
Kurichyar	16 (10.7)	0 (0.0)	0 (0.0)	0 (0.0)	16 (10.7)
Uralikurumar	0 (0.0)	15 (10.0)	0 (0.0)	0 (0.0)	15 (10.0)
Idukki	0 (0.0)	123 (82.0)	27 (18.0)	0 (0.0)	150 (100.0)
Mannan	0 (0.0)	64 (42.7)	0 (0.0)	0 (0.0)	64 (42.7)
Muthuvan	0 (0.0)	59 (39.3)	0 (0.0)	0 (0.0)	59 (39.3)
Malayarayan Christian	0 (0.0)	0 (0.0)	27 (18.0)	0 (0.0)	27 (18.0)
Palakkad	7 (4.7)	142 (94.6)	0 (0.0)	1 (0.7)	150 (100.0)
Irular	7 (4.7)	116 (77.3)	0 (0.0)	1 (0.7)	124 (82.7)
Mudugar	0 (0.0)	26 (17.3)	0 (0.0)	0 (0.0)	26 (17.3)

Source: Primary data

21.4 per cent of tribal households latrine in Wayanad are reported as hygienic, only 10.7 per cent of Adiyas and 10.7 per cent of Kurichyars are using hygienic bathrooms 62.6 per cent do not have hygienic ones. 10.7 per cent have lack of water the remaining 5.3 per cent have reported other types of drawbacks.

In Idukki district, 82 per cent of their households' toilet is reported as not hygienic, 18 per cent have lack of water. The main drawback of this district is lack of water. This affected their sanitation facility. In Palakkad district only 4.7 per cent of Irular tribal households are hygienic, 94.7 per cent do not have hygienic, 0.7 per cent have other types of defects.

7.5 Health Aspects of the Tribal community

Table 7.26
Daily calorie intake of household members in Wayanad

Tribal communities	Daily calorie intake of household members				Total
	500 - 1000 K	1000 - 1500 K	1500 - 2000 K	2000 - 2500 K	
Wayanad	77 (10.6)	537 (74.1)	87 (12.0)	24 (3.3)	725 (100.0)
Adiya	27 (3.7)	185 (25.5)	33 (4.6)	0 (0.0)	245 (33.8)
Kattunaikyan	37 (5.1)	165 (22.8)	9 (1.2)	0 (0.0)	211 (29.1)
Paniya	7 (1.0)	99 (13.7)	4 (0.5)	0 (0.0)	110 (15.2)
Kurichyar	0 (0.0)	30 (4.1)	26 (3.6)	24 (3.3)	80 (11.0)
Uralikurumar	6 (0.8)	58 (8.0)	15 (2.1)	0 (0.0)	79 (10.9)
Idukki	19 (2.5)	536 (71.7)	177 (23.7)	16 (2.1)	748 (100.0)
Mannan	1 (0.1)	260 (34.8)	49 (6.6)	0 (0.0)	310 (41.4)
Muthuvan	18 (2.4)	234 (31.3)	62 (8.3)	0 (0.0)	314 (42.0)
Malayarayan Christian	0 (0.0)	42 (5.6)	66 (8.8)	16 (2.1)	124 (16.6)
Palakkad	18 (2.6)	634 (90.7)	47 (6.7)	0 (0.0)	699 (100.0)
Irular	18 (2.6)	539 (77.1)	23 (3.3)	0 (0.0)	580 (83.0)
Mudugar	0 (0.0)	95 (13.6)	24 (3.4)	0 (0.0)	119 (17.0)

Source: Primary data

In Wayanad district, 10.6 per cent of tribes' daily calorie intake ranges between 500-1000 Kcalories. Tribes included in this group are 5.1 per cent of Kattunaikyans, 3.7 per cent of Adiyas, one per cent of Paniyas and 0.8 per cent of Uralikurumars. 74.1 per cent of tribes' calorie intake ranges between 1000-1500. 25.5 percent of Adiyas, 22.8 percent of Kattunaikyans, 13.7 per cent of Paniyas, 8 per cent of Uralikurumars and 4.1 per cent of Kurichyars are included in this group. 12 per cent of tribes' calorie intake ranges between 1500-2000. Tribes like 4.6 percent of Adiyas, 3.6 per cent of Kurichyars, 2.1 per cent of uralikurumar, 1.2 per cent of Kattunaikyans and only 0.5 per cent of Paniyas are included in this group of

Calorie intakes. Only 3.3 per cent of Kurichyar tribes' calorie intake ranges between 2000-2500Kcalories in the district. Data shows that calorie is very low when compared to what is required.

In Idukki district, 2.5 per cent of tribes' calorie intake ranges between 500-1000. 2.4 percent of Muthuvans and 0.1 per cent of Mannans are included in this group. 71.7 per cent tribes' daily calorie intake ranges between 1000-1500. It includes 34.8 per cent of Mannans, 31.3 per cent of Muthuvans and 5.6 per cent of Malayarayans. 23.7 per cent of tribes' calorie intake ranges between 1500-2000. Tribes like 8.8 per cent of Malayarayans, 8.3 per cent of Muthuvans and 6.6 per cent of Mannans. Only 2.1 per cent of Malayarayan tribes' daily calorie intake ranges between 2000-2500.

In Palakkad district, 2.6 per cent of Irular tribes' calorie intake ranges between 500-1000. 90.7 per cent of tribes' calorie intake ranges between 1000-1500. Tribes like 77.1 per cent of Irular and 13.6 per cent of Mudugar tribes are included in this calorie group. 6.7 per cent of tribes' calorie intake ranges between 1500-2000. Tribes like 3.3 per cent of Irulars and 3.4 per cent of Mudugars are included in this group. It is interesting to note that unlike other two districts Palakkad district does not have daily calorie intakes and it ranges between 2000-2500. Data shows that there are differences among tribes in daily calorie intake. We can see considerable differences among male and females in their daily calorie intake. Compared to male tribes, females are the vulnerable sections among tribes in Kerala. Females in any selected samples are not getting the required amount of calories.

Table 7.27
Showing Average daily calorie intake of Tribal communities

Districts	Tribal communities	Age	1-3 Years	4-6 Years	7-9 Years	10-12 Years	13-15 Years	16-18 Years	
Wayanad	Adiya	Male	879	1084	1184	1250.81	1294	1625	
		Female	855.07	1063.6	1086.67	1151	1222	1450	
	Kattunaikyan	Male	865	935	1024.43	1092.11	1298	1530	
		Female	812.14	887	1011.25	1062.43	1079	1325	
	Paniya	Male	959	1092	1290	1166.42	1281.43	1515	
		Female	955	1085	1053.5	1058.61	1275	1330	
	Kurichyar	Male	1299	1499	1499	1517.22	1658	1995	
		Female	1298	1298	1495	1480.42	1559	1910	
	Uralikurumar	Male	810	928.67	1077	1248.2	1325.67	1660	
		Female	809	990	1038.75	1147.45	1290	1490	
	Idukki	Mannan	Male	1095	1124	1248.33	1267.48	1493.83	1630
			Female	972	1201.64	1226.44	1266.64	1297.75	1420
Muthuvan		Male	1095	1124	1248.33	1267.48	1493.83	1650	
		Female	972	1201.64	1226.44	1266.64	1297.75	1420	
Malayarayan		Male	1270	1292.5	1490.67	1487.53	1610.17	1960	
		Female	1244	1209	1300	1406.18	1582	1685	
Palakkad	Irular	Male	730	918.4	1170.29	1234.37	1346.20	1515	
		Female	709	1009.77	1140.6	1153.24	1256.88	1300	
	Mudugar	Male	735	916	1297	1423.44	1481.5	1616	
		Female	722	913	1268	1243.41	1265	1405	

Source: Primary data

According to recommended dietary allowances for Indians (1989) the age of an individual is classified into six categories, 1-3 years, 4-6 years, 7-9 years, 10-12 years, 13-15 years and 16-18 years. In the case of (boys) below 3 years among Irulars the average intake of calorie variation between 730 kcalories and 865

kcalories, which is below the required intake of 1240 kcalories. In the case of Kurichyar and Malayarayan communities intake is slightly higher than the required level. In the case of Adiya, Paniya, Mannan and Muthuvan the intake is less, but better than the first group. In the case of girls also, the calorie intake is lower than the required level. In the case of the second group, (4-6 years) among all communities, the intake is lower. The same is the case for girls. Among the children of next category (7-9 years) no one could get intake of minimum calorie.

In the category of 10-12 years in the case of boys and girls, no one could get the required calorie. The lowest is reported from among Kattunaikyans and the highest from Kurichyar community. The analysis of calorie among the group less than 18 years, the average calorie intake is lower for both boys and girls. Hence we can infer that one of the major causes of morbidity among children for both girls and boys is poor calorie intake. In Attapadi region of Palakkad, where the survey was conducted, the reported morbidity and mortality are high, when compared with those tribal children from other districts the calorie intake is very low. It is clear that one of the reasons for the poor health status of tribals in the study can be insufficient calorie intake. In the case of children, insufficient food intake and poor health status in younger age are likely to have long run implications.

Table 7.28
Daily iron intake of household members

Tribal communities	Daily iron intake of household members					Mean	Mean
	0 - 5 MG	6 - 10 MG	11 - 15 MG	16 - 20 MG	21 - 25 MG	Male	Female
Wayanad	8 (1.1)	202 (27.9)	410 (56.6)	94 (12.9)	11 (1.5)	13.78	11.56
Adiya	6 (0.8)	62 (8.6)	147 (20.3)	30 (4.1)	0 (0.0)	13.22	10.88
Kattunaikyan	2 (0.3)	83 (11.4)	117 (16.1)	9 (1.2)	0 (0.0)	11.91	10.04
Paniya	0 (0.0)	36 (5.0)	70 (9.7)	4 (0.6)	0 (0.0)	12.96	10.31
Kurichyar	0 (0.0)	0 (0.0)	33 (4.6)	36 (5.0)	11 (1.5)	17.58	15.65
Uralikurumar	0 (0.0)	21 (2.9)	43 (5.9)	15 (2.1)	0 (0.0)	13.23	10.95
Idukki	0 (0.0)	99 (13.2)	513 (68.6)	136 (18.2)	0 (0.0)	14.63	12.53
Mannan	0 (0.0)	31 (4.1)	239 (32.0)	40 (5.3)	0 (0.0)	13.65	11.96
Muthuvan	0 (0.0)	67 (9.0)	203 (27.1)	44 (5.9)	0 (0.0)	14.09	11.42
Malayarayan Christian	0 (0.0)	1 (0.1)	71 (9.5)	52 (7.0)	0 (0.0)	16.14	14.20
Palakkad	1 (0.1)	111 (15.9)	544 (77.8)	43 (6.2)	0 (0.0)	13.58	11.13
Irular	1 (0.1)	95 (13.6)	465 (66.5)	19 (2.7)	0 (0.0)	13.04	10.82
Mudugar	0 (0.0)	16 (2.3)	79 (11.3)	24 (3.4)	0 (0.0)	14.11	11.44

Source: Primary data

In Wayanad district, the highest per cent of iron intake ranges between 21-25mg. It included only 1.5 per cent of Kurichyar in the district. In Idukki district, 18.2 per cent of tribes' daily iron intake ranges between 16-20 mg. It is the highest per cent of iron intakes in the district. It includes 7 per cent of Malayarayans, 5.9 per cent of Muthuvans, and 5.3 per cent of Mannans in the district. In Palakkad district, only 6.2 per cent of tribes' daily iron intake ranges between 16-20 mg, 77.8 per cent of tribes' daily iron intake ranges between 11-15mg.i.e. 66.5 per cent of Irular and 11.3 per cent of Mudugar in the district. 15.9 per cent of their iron intake ranges between 6-10mg, the remaining 0.1 per cent daily iron intake ranges between 0-5 mg.

Kurichyar has the highest iron intake at 17.58 mg for males and 15.65 mg for females. The lowest iron intake is by Kattunaikyans tribes at 11.91 mg for males and 10.04 mg for females. In Idukki district, Malayarayan tribe has the highest average iron intake at 16.14mg for males and 14.20mg for females. The lowest intake was reported by Mannans tribe at 13.65 mg for males and 11.96 mg for

females. Among the two tribes selected in Palakkad district, Irular males average iron intake is 13.04mg and female intake is 10.82 mg. Among Mudugars males it is 14.11mg and females is 11.44. It is to be noted that there are differences between daily iron intakes among various tribes selected in the samples. This lower iron intake leads to iron deficiency anaemia that will affect the healthy red blood cells. It can cause tiredness, shortness of breath, chest pain, and other symptoms. Severe iron deficiency anaemia can lead to heart problems, infections, problem with growth and development in children.

All the tribal households from Wayanad, Idukki and Palakkad reported that they take services of government hospitals, but they need to travel a long distance to reach the hospitals and this creates a miserable situation.

Table 7.29
Type of morbidity among members

Tribal communities	Type of morbidity among members			Total
	Communicable Diseases	Genetic Disorder Diseases	Non-communicable Diseases	
Wayanad	166 (52.0)	7(2.2)	146 (45.8)	319(100.0)
Adiya	45 (14.1)	5 (1.6)	48 (15.1)	98(30.8)
Kattunaikyan	76 (23.8)	2 (0.6)	39 (12.2)	117(36.6)
Paniya	23 (7.2)	0 (0.0)	21 (6.6)	44(13.8)
Kurichyar	8 (2.5)	0 (0.0)	17 (5.3)	25(7.8)
Uralikurumar	14 (4.4)	0 (0.0)	21 (6.6)	35(11.0)
Idukki	182 (50.8)	0 (0.0)	176 (49.2)	358(100.0)
Mannan	81 (22.6)	0 (0.0)	65 (18.2)	146(40.8)
Muthuvan	84 (23.5)	0 (0.0)	83 (23.2)	167(46.7)
Malayarayan Christian	17 (4.7)	0 (0.0)	28 (7.8)	45(12.5)
Palakkad	136 (48.7)	4 (1.5)	139 (49.8)	279(100.0)
Irular	110 (39.4)	3 (1.1)	113 (40.5)	226(81.0)
Mudugar	26 (9.3)	1 (0.4)	26 (9.3)	53(19.0)

Source; Primary data

Primary data from Wayanad Idukki and Palakkad shows that all the tribes have malnutrition and anaemia. The only difference is that the pattern of distribution of nutrient intake is not the same across different income groups in three districts.

Severity of Malnutrition and anaemia is higher among lower income group. In Wayanad district, 52.0 per cent reported communicable diseases, 45.8 per cent reported non-communicable diseases, while the remaining 2.2 per cent reported genetic disorder diseases. In Idukki district, 50.8 per cent have communicable diseases, 49.2 per cent have non communicable diseases. In Palakkad district, 48.7 per cent have communicable diseases, 49.8 per cent have non communicable diseases, and 1.5 per cent reported genetic disorder diseases.

Table 7.30
Access to Hospitals

Tribal communities	Type of hospital used for treatment			Total
	Govt. Hospital	Private Hospital	Hereditary Treatment	
Wayanad	274 (87.3)	39 (12.4)	1 (0.3)	314(100)
Adiya	84 (26.8)	9 (2.8)	1 (0.3)	94(29.9)
Kattunaikyan	104 (33.1)	12 (3.8)	0 (0.0)	116(36.9)
Paniya	34 (10.8)	10 (3.2)	0 (0.0)	44(14.0)
Kurichyar	20 (6.4)	4 (1.3)	0 (0.0)	24(7.7)
Uralikurumar	32 (10.2)	4 (1.3)	0 (0.0)	36(11.5)
Idukki	265 (79.0)	70 (21.0)	0 (0.0)	335(100.0)
Mannan	116 (34.6)	16 (4.8)	0 (0.0)	132(39.4)
Muthuvan	119 (35.5)	40 (11.9)	0 (0.0)	159(47.4)
Malayarayan Christian	30 (9.0)	14 (4.2)	0 (0.0)	44(13.2)
Palakkad	247 (95.8)	6 (2.3)	5 (1.9)	258(100.0)
Irular	205 (79.5)	1 (0.4)	1 (0.4)	207(80.3)
Mudugar	42 (16.3)	5(1.9)	4 (1.5)	51(19.7)

Source: Primary data

The data reveals that a majority depends on government hospital facility for getting treatment. Only a few use hereditary treatment.

Table 7.31
Period of illness

Tribal communities	Frequency of Illness				Total
	Permanent Illness	More than once in a month	Once in a month / Rarely	Sudden Incident	
Wayanad	153 (47.8)	64 (20.0)	91 (28.4)	12 (3.8)	320(100.0)
Adiya	51 (15.9)	27 (8.4)	15 (4.7)	6 (1.9)	99(30.9)
Kattunaikyan	46 (14.4)	13 (4.1)	56 (17.5)	1 (0.3)	116(36.3)
Paniya	19 (5.9)	19 (5.9)	4 (1.3)	2 (0.6)	44(13.7)
Kurichyar	15 (4.7)	0 (0.0)	8 (2.5)	2 (0.6)	25(7.8)
Uralikurumar	22 (6.9)	5 (1.6)	8 (2.5)	1 (0.3)	36(11.3)
Idukki	147 (41.5)	135 (38.1)	49 (13.8)	23 (6.5)	354(100.0)
Mannan	51 (14.4)	70 (19.8)	15 (4.2)	6 (1.7)	142(40.1)
Muthuvan	78 (22.0)	43 (12.1)	28 (7.9)	17 (4.8)	166(46.8)
Malayarayan Christian	18 (5.1)	22 (6.2)	6 (1.7)	0 (0.0)	46(13.0)
Palakkad	118 (43.2)	110 (40.3)	38 (13.9)	7 (2.6)	273(100.0)
Irular	100 (36.6)	91 (33.3)	26 (9.5)	6 (2.2)	223(81.6)
Mudugar	18 (6.6)	19 (7.0)	12 (4.4)	1 (0.4)	50(18.4)

Source: Primary data

Wayanad district includes 47.8 per cent of permanently diseased tribes with 28.4 per cent tribes having illness once in a month, 20 per cent tribes have more than once in a month, 3.8 per cent of them have disease as a sudden incident. In Idukki district, 41.5 per cent tribes have permanent illness and their illness continued through their life time, 38.1 per cent tribes have reported that their diseases have occurred more than once in a month. 13.8 per cent tribes reported that they were attacked by diseases once in a month, 6.5 per cent tribes diseases have occurred as sudden incident.

In Palakkad district, 43.2 per cent tribes have permanent diseases, 40.3 per cent tribes diseases have occurred twice or more in a month, 13.9 per cent tribes' diseases have occurred once in a month, 2.6 per cent tribes diseases have occurred suddenly.

Table 7.32
Period of ailment

Tribal communities	Period of Ailment		Total
	Short Term	Long Term	
Wayanad	200 (67.3)	97 (32.7)	297(100.0)
Adiya	61 (20.5)	37 (12.5)	98(33.0)
Kattunaikyan	67 (22.6)	33 (11.1)	100(33.7)
Paniya	35 (11.8)	9 (3.0)	44(14.8)
Kurichyar	16 (5.4)	8 (2.7)	24(8.1)
Uralikurumar	21 (7.0)	10 (3.4)	31(10.4)
Idukki	201 (57.9)	146 (42.1)	347(100.0)
Mannan	91 (26.2)	49 (14.1)	140(40.3)
Muthuvan	88 (25.4)	75 (21.6)	163(47.0)
Malayarayan Christian	22 (6.3)	22 (6.3)	44(12.7)
Palakkad	131 (48.3)	140 (51.7)	271(100.0)
Irular	110 (40.6)	111 (41.0)	221(81.6)
Mudugar	21 (7.7)	29 (10.7)	50(18.4)

Source: Primary data

Short term period of ailment was reported the highest in Wayanad district at 67.3 per cent and long term period is reported the highest in Palakkad district at 51.7 per cent, followed by 42.1 per cent of tribes in Idukki district. Irular community reported the highest in short term ailment and in long term ailment.

Table 7.33
Details of hospitalized patients in the household

Tribal communities	Any member hospitalised during last 30 days		Total
	Yes	No	
Wayanad	29 (4.0)	696 (96.0)	725 (100.0)
Adiya	11 (1.5)	234 (32.3)	245 (33.8)
Kattunaikyan	9 (1.2)	202 (27.9)	211 (29.1)
Paniya	3 (0.4)	107 (14.8)	110 (15.2)
Kurichyar	3 (0.4)	77 (10.6)	80 (11.0)
Uralikurumar	3 (0.4)	76 (10.5)	79 (10.9)
Idukki	46 (6.1)	702 (93.9)	748 (100.0)
Mannan	11 (1.5)	299 (40.0)	310 (41.4)
Muthuvan	28 (3.7)	286 (38.2)	314 (42.0)
Malayarayan Christian	7 (0.9)	117 (15.6)	124 (16.6)
Palakkad	27 (3.8)	672 (96.2)	699 (100.0)
Irular	19 (2.7)	561 (80.3)	580 (83.0)
Mudugar	8 (1.1)	111 (15.9)	119 (17.0)

Source: Primary data

In Wayanad district, 4 per cent tribes are hospitalized during last 30 days, and the remaining, 96 per cent are not. In Idukki district 6.1 per cent are hospitalized and 93.9 per cent are not hospitalized. In Palakkad district 3.8 per cent are hospitalized, and the remaining 96.2 per cent are not hospitalized. The highest per cent are reported by Adiyas, Muthuvans and Irulars in the selected samples and most of respondents take treatment from private hospitals.

7.6 Details of Women, Children and Aged persons

Table 7.34
Children less than 5 years received all necessary vaccination

Tribal communities	Children less than 5 years received all necessary vaccination			Total
	Complete Vaccination	Partial Vaccination	Not Received	
Wayanad	0 (0.0)	31 (44.3)	39 (55.7)	70(100.0)
Adiya	0 (0.0)	7 (10.0)	17 (24.3)	24(34.3)
Kattunaikyan	0 (0.0)	23 (32.9)	9 (12.9)	32(45.8)
Paniya	0 (0.0)	1 (1.4)	6 (8.6)	7(10.0)
Kurichyar	0 (0.0)	0 (0.0)	3 (4.2)	3(4.2)
Uralikurumar	0 (0.0)	0 (0.0)	4 (5.7)	4(5.7)
Idukki	26 (41.9)	12 (19.4)	24 (38.7)	62(100.0)
Mannan	11 (17.7)	2 (3.2)	8 (12.9)	21(33.9)
Muthuvan	11 (17.7)	10 (16.1)	14 (22.6)	35(56.4)
Malayarayan Christian	4 (6.5)	0 (0.0)	2 (3.2)	6(9.7)
Palakkad	3 (6.4)	19 (40.4)	25 (53.2)	47(100.0)
Irular	3 (6.4)	16 (34.0)	14 (29.8)	33(70.2)
Mudugar	0 (0.0)	3 (6.4)	11 (23.4)	14(29.8)

Source: Primary data

Collected sample in Wayanad district shows that only 9.7 per cent of tribes fall under the category of under 5 years of population. It is to be noted that no children under this category receive complete vaccination. 44.3 per cent of them receive partial vaccination in Wayanad district, the remaining 55.7 per cent of them have not received any vaccination. Idukki district with 8.3 per cent of under 5 years children, unlike other two districts gets 41.9 per cent of them completely vaccinated, 19.4 per cent partially vaccinated and 38.7 per cent of them yet to receive any kind of vaccination. Palakkad district has only 6.7 per cent of under 5 year age children but only 6.4 per cent of them receive complete vaccination, 40.4 per cent of them receive partial vaccination and 53.2 per cent have not received any kind of vaccination.

24.7 per cent of collected samples represent under 5years of children. The majority of them received only partial vaccination. This affected the health conditions of next generation among tribes in Kerala. This shows their backwardness

Table 7.35
Number of women aged 18-49 who had given birth to children

Tribal communities	Women aged 18-49 getting pregnant any time		Total
	Yes	No	
Wayanad	151 (86.3)	24 (13.7)	175(100.0)
Adiya	53 (30.3)	12 (6.9)	65(37.2)
Kattunaikyan	44 (25.1)	9 (5.1)	53(30.3)
Paniya	23(13.1)	2 (1.1)	25(14.2)
Kurichyar	16 (9.1)	1 (0.6)	17(9.7)
Uralikurumar	15 (8.6)	0 (0.0)	15(8.6)
Idukki	154 (89.6)	18 (10.4)	172(100.0)
Mannan	66 (38.4)	6 (3.5)	72(41.9)
Muthuvan	61 (35.5)	12 (6.9)	73(42.4)
Malayarayan Christian	27 (15.7)	0 (0.0)	27(15.7)
Palakkad	153 (92.7)	12 (7.3)	165(100.0)
Irular	127 (76.9)	12 (7.3)	139(84.2)
Mudugar	26 (15.8)	0 (0.0)	26(15.8)

Source: Primary data

In Wayanad district, 86.3 per cent of women aged 18- 49 reported that they become pregnant during their healthy life span. 13.7 per cent do not get pregnant during this period. In Idukki district, the same is reported by 89.6 per cent and 10.4 per cent do not get pregnant during the period. In Palakkad district, 92.7 per cent of women reported that they get pregnant during their reproductive age. 7.3 per cent women reported that they do not get pregnant in their life time.

Table 7.36
Place of birth

Tribal communities	Govt hospital	Home	Total
Wayanad	82 (54.4)	69 (45.6)	151(100.0)
Adiya	25 (16.6)	28 (18.5)	53(35.1)
Kattunaikyan	22 (14.6)	22 (14.6)	44(29.2)
Paniya	11 (7.3)	12 (7.9)	23(15.2)
Kurichyar	16 (10.6)	0 (0.0)	16(10.6)
Uralikurumar	8 (5.3)	7 (4.6)	15(9.9)
Idukki	137 (89.0)	17 (11.0)	154(100.0)
Mannan	65 (42.2)	1 (0.6)	66(42.9)
Muthuvan	45 (29.2)	16 (10.4)	61(39.6)
Malayarayan Christian	27 (17.5)	0 (0.0)	27(17.5)
Palakkad	125 (82.2)	27 (17.8)	152(100.0)
Irular	104 (68.4)	22 (14.5)	126(82.9)
Mudugar	21 (13.8)	5 (3.3)	26(17.1)

Source: Primary data

54.4 per cent of tribes in Wayanad district reported that they have given birth to their children in government hospitals and the remaining 45.6 per cent reported that they give birth to their children at home itself. Things were different in Idukki district where 89 per cent of women give birth to their children at government hospital. The remaining 11.0 per cent give birth to their children at home. 82.2 per cent of women tribals in Palakkad district give birth to their children at government hospital and the remaining 17.8 per cent of their delivery take place at home.

Table 7.37
Birth interval of children

Tribal communities	Birth Interval of Children				Total
	1 Year	2 Years	Above 2 Years	One child only	
Wayanad	9 (6.0)	70 (46.4)	47 (31.1)	25 (16.5)	151(100.0)
Adiya	2(1.3)	28 (18.5)	12 (7.9)	11 (7.3)	53(35.1)
Kattunaikyan	4 (2.6)	8 (5.3)	22 (14.5)	10 (6.6)	44(29.1)
Paniya	2 (1.3)	9 (6.0)	8 (5.3)	4 (2.6)	23(15.2)
Kurichyar	1 (0.7)	15 (10.0)	0 (0.0)	0 (0.0)	16(10.7)
Uralikurumar	0 (0.0)	10 (6.6)	5 (3.3)	0 (0.0)	15(9.9)
Idukki	21 (13.6)	42 (27.3)	70 (45.5)	21 (13.6)	154(100.0)
Mannan	5 (3.2)	21 (13.6)	28 (18.2)	12 (7.8)	66(42.9)
Muthuvan	15 (9.7)	14 (9.1)	24 (15.6)	8 (5.2)	61(39.6)
Malayarayan Christian	1 (0.6)	7 (4.5)	18 (11.7)	1 (0.6)	27(17.5)
Palakkad	10 (6.6)	43 (28.3)	74 (48.7)	25 16.4)	152(100.0)
Irular	7 (4.6)	29 (19.1)	67 (44.1)	23 (15.1)	126(82.9)
Mudugar	3 (2.0)	14 (9.2)	7 (4.6)	2 (1.3)	26(17.1)

Source: Primary data

46.4 per cent of women in Wayanad district reported that their birth interval of children was two years, 31.1 per cent reported above two years of birth interval among their children, 6 per cent reported one year interval, and 16.5 per cent reported that they have only one child. 45.5 per cent of women in Idukki district reported that birth interval of their children is above 2 years. 27.3 per cent women reported that their birth interval is 2 years, 13.6 per cent reported 1 year of birth interval, and another 13.6 percent reported one child only. 48.7 per cent women's birth interval in Palakkad district is reported above 2 years, 28.3 per cent reported 2 years, 6.6 per cent reported one year and remaining 16.4 per cent reported one child only.

Table 7.38
Duration of breast feed for their first child

Tribal communities	Duration of breast feeding for first child				Total
	Below 1 Year	1 Year	1.5 Years	2 Years	
Wayanad	10 (6.7)	18 (12.2)	48 (32.5)	72 (48.6)	148(100.0)
Adiya	2 (1.4)	8 (5.4)	19 (12.8)	23 (15.5)	52(35.1)
Kattunaikyan	5 (3.4)	7 (4.7)	5 (3.4)	25 (16.9)	42(28.4)
Paniya	2 (1.4)	1 (0.7)	8 (5.4)	12 (8.1)	23(15.6)
Kurichyar	1 (0.7)	1 (0.7)	6 (4.0)	8 (5.4)	16(10.8)
Uralikurumar	0 (0.0)	1 (0.7)	10 (6.8)	4 (2.7)	15(10.1)
Idukki	21 (13.7)	6 (3.9)	42 (27.2)	85 (55.2)	154(100.0)
Mannan	5 (3.3)	0 (0.0)	23 (14.9)	38 (24.7)	66(43.0)
Muthuvan	15 (9.7)	6 (3.9)	12 (7.8)	28 (18.1)	61(39.6)
Malayarayan Christian	1 (0.7)	0 (0.0)	7 (4.5)	19 (12.3)	27(17.4)
Palakkad	10 (6.7)	1 (0.6)	46 (30.9)	92 (61.8)	149(100.0)
Irular	7 (4.7)	1 (0.6)	31 (20.8)	84(56.4)	123(82.5)
Mudugar	3 (2.0)	0 (0.0)	15 (10.1)	8 (5.4)	26(17.5)

Source: Primary data

Only 48.6 per cent of women in Wayanad district reported that they feed their first child upto 2years, 32.5 per cent of women feed their child upto 1 and ½ years, 12.2 per cent reported upto one year, 6.7 per cent reported below one year. 55.2 per cent of women in Idukki district reported that they have fed their child up to 2 years, 27.2 reported 1 and ½ years, 3.9 per cent one year and 13.7 per cent reported less than one year. In Palakkad district, 61.8 per cent of women reported they have fed their first child up to 2 years, 30.9 per cent up to 1 and ½ years, 0.6 reported 1 year and 6.7 per cent less than one year.

Table 7.39
Reason for stopping breast feeding

Tribal communities	Reason for stopping breast feeding			Total
	Due to second pregnancy	Ill health condition of mother	Lack of sufficient breast milk	
Wayanad	9 (6.0)	0 (0.0)	139 (94.0)	148(100.0)
Adiya	2 (1.3)	0 (0.0)	50 (33.9)	52(35.2)
Kattunaikyan	4 (2.7)	0 (0.0)	38 (25.7)	42(28.4)
Paniya	2 (1.4)	0 (0.0)	21 (14.2)	23(15.6)
Kurichyar	1 (0.6)	0 (0.0)	15 (10.1)	16(10.7)
Uralikurumar	0 (0.0)	0 (0.0)	15 (10.1)	15(10.1)
Idukki	21 (13.6)	1 (0.6)	132 (85.7)	154(100.0)
Mannan	5 (3.2)	0 (0.0)	61 (39.6)	66(42.9)
Muthuvan	15 (9.7)	1 (0.6)	45 (29.2)	61(39.6)
Malayarayan Christian	1 (0.6)	0 (0.0)	26 (16.9)	27(17.5)
Palakkad	10 (6.7)	0 (0.0)	139 (93.3)	149(100.0)
Irular	7 (4.7)	0 (0.0)	116 (77.9)	123(82.6)
Mudugar	3 (2.0)	0 (0.0)	23 (15.4)	26(17.4)

Source: Primary data

94 per cent in Wayanad, 85.7 per cent in Idukki and 93.3 per cent of Palakkad district women reported that lack of breast milk is the main reason for stopping breast feeding of their first child. 0.6 per cent of women in Idukki district reported due to their ill health condition. 6 per cent of Wayanad, 13.6 per cent from Idukki and 6.7 per cent from Palakkad women reported that it is due to second pregnancy.

Table 7.40
Women faced abortion any time

Tribal communities	Women faced abortion any time		Total
	Yes	No	
Wayanad	20 (9.5)	191 (90.5)	211(100.0)
Adiya	10 (4.7)	66 (31.3)	76(36.0)
Kattunaikyan	6 (2.8)	56 (26.5)	62(29.3)
Paniya	4 (1.9)	29 (13.7)	33(15.6)
Kurichyar	0 (0.0)	20 (9.5)	20(9.5)
Uralikurumar	0 (0.0)	20 (9.5)	20(9.5)
Idukki	13 (6.7)	181 (93.3)	194(100.0)
Mannan	8 (4.1)	74 (38.1)	82(42.2)
Muthuvan	4 (2.1)	81 (41.8)	85(43.9)
Malayarayan Christian	1 (0.5)	26 (13.4)	27(13.9)
Palakkad	16 (8.9)	164 (91.1)	180(100.0)
Irular	14 (7.8)	141 (78.3)	155(86.1)
Mudugar	2 (1.1)	23 (12.8)	25(13.9)

Source: Primary data

9.5 per cent in Wayanad, 6.7 per cent of Idukki and 8.9 per cent of Palakkad districts women reported that they have faced abortion during their pregnancy. Primary data shows that no women of Kurichyar and Uralikurumar community in Wayanad district reported the same.

Table 7.41
Reason for abortion

Tribal communities	Reason for Abortion			Total
	Ill health condition of mother	Lack of sufficient weight to baby	Lack of medical care	
Wayanad	16 (80.0)	2 (10.0)	2 (10.0)	20(100.0)
Adiya	8 (40.0)	2 (10.0)	0 (0.0)	10(50.0)
Kattunaikyan	4 (20.0)	0 (0.0)	2 (10.0)	6(30.0)
Paniya	4 (20.0)	0 (0.0)	0 (0.0)	4(20.0)
Kurichyar	0 (0.0)	0 (0.0)	0 (0.0)	0(0.0)
Uralikurumar	0 (0.0)	0 (0.0)	0 (0.0)	0(0.0)
Idukki	13 (100.0)	0 (0.0)	0 (0.0)	13(100.0)
Mannan	8 (61.5)	0 (0.0)	0 (0.0)	8(61.5)
Muthuvan	4 (30.8)	0 (0.0)	0 (0.0)	4(30.8)
Malayarayan Christian	1 (7.7)	0 (0.0)	0 (0.0)	1(7.7)
Palakkad	14 (87.5)	0 (0.0)	2 (12.5)	16(100.0)
Irular	12 (75.0)	0 (0.0)	2 (12.5)	14(87.5)
Mudugar	2 (12.5)	0 (0.0)	0 (0.0)	2(12.5)

Source: Primary data

80 per cent of women from Wayanad, 100 per cent from Idukki and 87.5 per cent of them from Palakkad reported that ill health condition is the main reason for their abortion. Only 10 per cent from Wayanad reported that their abortion is mainly due to lack of weight of their babies. 10 per cent from Wayanad and 12.5 per cent women from Palakkad district reported that it is due to lack of medical care.

Table 7.42
Women aged 18 -49 get all maternity services from Government department

Tribal communities	Women aged 18-49 get all maternity services from Govt. department				Total
	Pre-natal Care	Post-natal Care	Ante-natal Care	No Services	
Wayanad	0 (0.0)	83 (47.4)	24 (13.7)	68 (38.9)	175(100.0)
Adiya	0 (0.0)	24 (13.7)	12 (6.9)	29 (16.6)	65(37.2)
Kattunaikyan	0 (0.0)	24 (13.7)	9 (5.1)	20 (11.4)	53(30.2)
Paniya	0 (0.0)	11 (6.3)	2 (1.1)	12 (6.9)	25(14.3)
Kurichyar	0 (0.0)	16 (9.1)	1 (0.6)	0 (0.0)	17(9.7)
Uralikurumar	0 (0.0)	8 (4.6)	0 (0.0)	7 (4.0)	15(8.6)
Idukki	1 (0.6)	137(79.6)	18 (10.5)	16 (9.3)	172(100.0)
Mannan	1 (0.6)	64 (37.2)	6 (3.5)	1 (0.6)	72(41.9)
Muthuvan	0 (0.0)	46 (26.7)	12 (6.9)	15 (8.7)	73(42.4)
Malayarayan Christian	0 (0.0)	27 (15.7)	0 (0.0)	0 (0.0)	27(15.7)
Palakkad	2 (1.2)	124 (75.1)	13 (7.9)	26 (15.7)	165(100.0)
Irular	2 (1.2)	103 (62.4)	12 (7.3)	22 (13.3)	139(84.2)
Mudugar	0 (0.0)	21 (12.7)	1 (0.6)	4 (2.4)	26(15.8)

Source: Primary data

47.4 per cent women from Wayanad, 79.6 per cent from Idukki and 75.1 per cent from Palakkad reported that they have got postnatal care from the government department. 13.7 per cent women from Wayanad, 10.5 per cent from Idukki and 7.9 per cent from Palakkad district reported that they received antenatal care from the government department. Only 0.6 per cent of women from Idukki and 1.2 per cent from Palakkad received pre-natal care from the government department. 38.9 per cent women from Wayanad, 9.3 per cent from Idukki and 15.7 per cent from Palakkad district reported that they did not get any maternity services from related departments.

Table 7.43
Children less than 5 years going to anganwadi

Tribal communities	Children aged less than 5 years going to anganwadi		Total
	Yes	No	
Wayanad	35 (50.7)	34 (49.3)	69(100.0)
Adiya	11 (15.9)	12 (17.4)	23(33.3)
Kattunaikyan	19 (27.5)	13 (19.0)	32(46.5)
Paniya	2 (3.0)	5 (7.2)	7(10.2)
Kurichyar	0 (0.0)	3 (4.3)	3(4.3)
Uralikurumar	3 (4.3)	1 (1.4)	4(5.7)
Idukki	42 (75.0)	14 (25.0)	56(100.0)
Mannan	17 (30.4)	4 (7.1)	21(37.5)
Muthuvan	19 (33.9)	10 (17.9)	29(51.8)
Malayarayan Christian	6 (10.7)	0 (0.0)	6(10.7)
Palakkad	11 (29.7)	26 (70.3)	37(100.0)
Irular	11 (29.7)	16 (43.2)	27(73.0)
Mudugar	0 (0.0)	10 (27.0)	10(27.0)

Source: Primary data

Primary data collected included 24.7 per cent of child population. In Wayanad district 50.7 per cent children are going to anganwadi. The remaining 49.3 per cent are not going. In Idukki district 75 per cent children are going to anganwadi and 25 per cent are not. In Palakkad district, only 29.7 per cent are going to anganwadi and 70.3 per cent are not going. Of the three districts where children are not going to anganwadi, Palakkad is on top and those children who are going to anganwadi are reported the highest in Idukki district.

In Wayanad , Idukki and Palakkad districts all the anganwadis are situated within the tribal settlement of less than one km. Except Palakkad district, all children and pregnant women in Wayanad ,and Idukki district are getting nutritious food from their respective anganwadis.

Table 7.44
Persons aged 65 and above have physical mobility

Tribal communities	Aged persons(65 and above) having physical mobility
	Mobility
Wayanad	3 (0.4)
Adiya	0 (0.0)
Kattunaikyan	0 (0.0)
Paniya	1 (0.1)
Kurichyar	2 (0.3)
Uralikurumar	0 (0.0)
Idukki	30 (4.0)
Mannan	22 (2.9)
Muthuvan	7 (0.9)
Malayarayan Christian	1 (0.1)
Palakkad	17 (2.4)
Irular	15 (2.1)
Mudugar	2 (0.3)

Source: Primary data

Sample data includes only 6.8 per cent of aged population (above 65 years).

Available data shows that all of them are mobile.

Table 7.45
Details of mortality during the last 5 years

Tribal communities	Any children or other members in the household had died during last 5 years					Total
	Below 5 Years Child	11 - 17 Years	18 - 49 Years	50 - 64 Years	Above 65Years	
Wayanad	0 (0.0)	0 (0.0)	2 (8.7)	6 (26.1)	15 (65.2)	23(100.0)
Adiya	0 (0.0)	0 (0.0)	0 (0.0)	2 (8.7)	5 (21.7)	7(30.4)
Kattunaikyan	0 (0.0)	0 (0.0)	2 (8.7)	4 (17.4)	5 (21.7)	11(47.8)
Paniya	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (8.7)	2(8.7)
Kurichyar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (4.4)	1(4.4)
Uralikurumar	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (8.7)	2(8.7)
Idukki	0 (0.0)	0 (0.0)	4 (80.0)	1 (20.0)	0 (0.0)	5(100.0)
Mannan	0 (0.0)	0 (0.0)	3 (60.0)	0 (0.0)	0 (0.0)	3(60.0)
Muthuvan	0 (0.0)	0 (0.0)	1 (20.0)	1 (20.0)	0 (0.0)	2(40.0)
Malayarayan Christian	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0(0.0)
Palakkad	3 (15.0)	6 (30.0)	3 (15.0)	5 (25.0)	3 (15.0)	20(100.0)
Irular	1 (5.0)	6 (30.0)	1 (5.0)	0 (0.0)	1 (5.0)	9(45.0)
Mudugar	2 (10.0)	0 (0.0)	2 (10.0)	5 (25.0)	2 (10.0)	11(55.0)

Source: Primary data

Primary data shows that in Wayanad district, 8.7 per cent of people in 18-49 age group died. 26.1 per cent of tribes under the age group of 50-64 years, 65.2 per cent of tribes above 65 years died during the last 5 years. Idukki district data revealed that 80 per cent of tribes under the age group of 18-49 years, 20 per cent under the age group of 50-64 years have died during the last 5 years. In Palakkad district, 15 per cent are infants, 30 per cent of tribes under the age group of 11-17 years, 15 per cent under the age group of 18-49 years, 25 per cent of tribes under the age group of 50-64 years and 15 per cent of tribe above 65 years have died during the last 5 years.

7.7 Causes for mortality

In Wayanad district, 0.4 per cent of tribes' death was due to accident, 1.2 per cent due to tuberculosis, 0.7 per cent due to heart attack, 0.4 per cent due to sickle cell anaemia, and 0.4 per cent due to old age. In Idukki district, 0.3 per cent of tribes death was due to accident and 0.4 per cent due to heart attack. In Palakkad district 0.1 per cent due to pre term congenital heart diseases, 0.3 per cent was due to breast milk aspiration, 0.9 per cent due to dengue fever, 0.6 per cent due to tuberculosis, 0.4 per cent due to heart attack, 0.1 per cent due to sickle cell anaemia, 0.3 per cent due to old age and 0.1 per cent due to female fight.

Table 7.46
Details of Infant Mortality Rate from Attapadi Block Panchayat of Palakkad District

Time period of living	Irular	Mudugar	Kurumbar	Total
Day itself only	5	0	1	6
Two days	3	0	0	3
Three days	2	0	0	2
Five days	2	1	0	3
Six days	2	0	0	2
Seven days	1	0	0	1
Eleven days	1	0	0	1
Thirteen days	1	0	0	1
Sixteen days	2	0	0	2
One month	1	3	1	5
Two months	1	0	0	1
Three months	4	0	0	4
Four months	0	1	0	1
Six months	1	1	0	2
Seven months	1	0	0	1
Ten months	1	0	0	1
Eleven months	1	0	0	1
One year	1	0	0	1
Two & Half Years	1	0	0	1
Seven years	1	0	0	1
Total	32	6	2	40

Source: ICDS_Survey report Attapadi,(2013)

Infant mortality rate of Attapadi tribes shows that 32 Irular infants, 6 infants from Mudugars and 2 from Kurumbar tribes have died during the period of ICDS survey 2013.

7.7.1 Details of Infant Mortality Rate from Attapadi Block panchayat Report 2013

Table 7.47
Time period of living

Time Period of Living	Tribal communities			Total
	Irular	Mudugar	Kurumbar	
Up to One Month	20	4	2	26
2 - 12 Months	10	2	0	12
More than 12 Months	2	0	0	2
Total	32	6	2	40

Source: ICDS Survey Report 2013

Out of 32 infants of Irular tribes, 20 infants lived up to one month. 10 infants from Irular tribe lived up to 2-12 months. Only 2 tribal infant lived up to more than 12 months. Only 4 from Mudugar tribes lived up to one month and 2 infants lived 2 to 12 months. Only 2 children from Kurumbar tribes lived up to one month.

7.7.2 Details of Causes for the Infant Mortality of Attapadi Block Panchayat

Table 7.48
Cause of Death

Cause of Death	Tribal communities			Total
	Irular	Mudugar	Kurumbar	
Broncho pneumonia	1	0	0	1
Pneumonia and anaemia	1	0	0	1
Intra-uterus- growth retardation	0	0	1	1
Development delay growth retardation	1	0	0	1
Preterm	4	0	0	4
Abdominal vomiting	1	0	0	1
Premature low birth and heart complaint	1	0	0	1
Heart problem	1	1	0	1
Acute respiratory disease syndrome	3	0	0	3
Aspiration pneumonia	1	0	0	1
Unknown	3	0	0	3
Aspiration meningitis	1	0	0	1
Cardio respiratory arrest	1	0	0	1

Preterm congenital heart diseases	1	0	0	1
Tb meningitis	1	0	0	1
Birth asphyria	1	0	0	1
Aspiration of breast milk	1	2	0	3
Congenital anomaly of heart	1	0	0	1
Cardiac problem	0	1	1	2
Aspiration	1	0	0	1
Pre mature delivery	3	0	0	3
Cardiac arrest	1	0	0	1
Brain cell damaged and epilepsy	0	1	0	1
Bleeding pericardial effusion	1	0	0	1
Respiratory distress	1	0	0	1
Respiratory infection	1	0	0	1
Low birth weight	0	1	0	1
Total	32	6	2	40

Source: ICDS survey report 2013

There are several causes for the infant mortality rate of tribes. The highest number of infant mortality is reported due to pre term birth, premature delivery and acute respiratory diseases syndrome. Certain unknown factors also influenced IMR reported in Attapadi of Palakkad district. Broncho pneumonia, pneumonia and anaemia, food aspiration, intra-uterus growth retardation, development delay growth retardation, abdominal vomiting, premature low-birth and heart complaint, heart problem, acute respiratory diseases syndrome, aspiration pneumonia, meningitis, cardio respiratory arrest, pre term congenital heart diseases, TB meningitis, birth asphyria, aspiration of breast milk, congenital anomaly of heart, cardiac problem, aspiration, pre mature delivery, cardiac arrest, brain cells damaged and epilepsy, bleeding pericardial effusion, respiratory distress, respiratory infection, low birth weight are the reasons for IMR in Attapadi block panchayat of Palakkad district.

NFHS (2017) pointed out that 27 per cent of under five years old children including tribe community and non-tribe communities are severely malnourished in Wayanad district. Malnutrition-related problems are continuing in the tribal

community of Kerala. Recently 3000 children in Wayanad district were recorded as malnourished. Lack of food is the main reason for their malnutrition. Severe malnutrition is reported in the Mananthavadi and Sulthan Bathery Block panchayat in the Wayanad district (ICDS, 2018). A survey conducted by ICDS (2018) among the 231 anganwadis of Wayanad district gives the information that 839 under five years children have not recorded proper weight according to their age and height. Among them 130 children are severely malnourished. 863 malnourished children are reported in the Sulthanbathery block panchayat in the Wayanad district. This pointed out the pathetic situations of tribal communities in Kerala.

It is well understood that malnutrition and related health problems are some of the most important issues facing the country. Socially marginalised groups, women and children in particular, in many states are the worst victims of this problem. It is shocking to note that Kerala – a state with remarkable achievements in human, and social (health) indicators – has excluded the tribal groups from its so-called achievements. It shows that development in human and social (health) sectors is not inclusive, as claimed by the State. For instance, more than 60 tribal infant/children died due to the combined impacts of loss of indigenous food items, poor public distribution system, non-availability of alternative nutritious food and the loss of employment opportunities, which led to widespread starvation along with high malnutrition and related health problems (Ekbal Committee, 2013) in the past 24 months in Attappadi, the only tribal block in the state of Kerala. But the same situation is continuing in Wayanad district also especially Mananthavadi block panchayat and Sulthanbathery block panchayat (ICDS, 2018).

From the available data it became clear that mortality and morbidity, especially acute illness, are more contracted by the child population, especially in the Attappadi block panchayat of Palakkad district. Under five year's malnourished deaths are mainly related to the poor nutritional status of women in the districts. Moreover they are not receiving their traditional food items such as *ragi*, *chama*, *cholam*, *veraku*, *thina*, *thuvvara*, honey, tubers, roots, medicinal vegetables, etc. land alienation

of the tribals, loss of traditional shifting cultivation, neglect of the tribal people and inaction by the departments of Tribal and Social Welfare and Health; failure of public distribution system; poor performance of Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) contrary to the practices in other places, the anganwadis do not distribute eggs, milk, and bananas among tribal children; lack of essential drug supplies such as Mesoprestol and Magsulf for delivery and childbirth related medical emergencies; disempowerment of the adivasi communities; failure of Attappadi Hill Area Development Society (AHADS), a Japanese funded project, which works towards ensuring a sustainable livelihood and ecology; and institutional delays and inefficiency in implementing the laws, schemes and projects meant for tribal groups in Attappadi all have affected the health status of women and children in the Attappadi of Palakkad.

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MAJOR FINDINGS AND CONCLUSION

8.1 Major Findings

Socio-economic conditions, poverty and health status are related to each other. The effects of income, education, occupation, environment, behaviour, and access to health services all tend to operate together to influence health status. Socio refer to “the study of the behaviour of people,” including the ways they interact with one another or their family structures. The word ‘economic’ refer to the economy, such as people’s income and finances. Socio economic links financial and social issues together. Poverty is one of the major issues faced by the tribal communities in Kerala. Poverty is a situation where a household or an individual is unable to meet the basic necessities of life which include consumption and non-consumption items, considered as minimum requirement to sustain livelihood. Poverty creates ill health because it forces people to live in environments that make them sick, without decent shelter, clean water or adequate sanitation (WHO, 2018). So the findings of the present study includes socio-economic conditions, poverty and health status of tribal communities in Kerala.

1. Age distribution of tribal communities among the three districts shows that the highest per cent of population is reported under the age group up to 15 years and the lowest is reported under the age group of 61-75 years. Population under the age group up to 15 years is reported highest in Idukki as 46.1 per cent, followed by Wayanad 45.9 per cent and Palakkad 42.9 per cent.
2. Gender distribution gives the information that female tribes are greater compared to the male tribes. It is reported highest in Wayanad district as 55.6 per cent, followed by Idukki 55.1 per cent and in Palakkad, it is 50.1 per cent.
3. Marital status among the communities shows that 46.4 per cent are married in Palakkad, followed by Wayanad 45.7 per cent and Idukki 42.1 per cent respectively. Nearly eight per cent of widows or widowers were reported in Idukki, followed by Wayanad four per cent and 3.7 per cent in Palakkad. Divorces are only a few, only 3.4 per cent in Wayanad, the highest in the district.
4. Educational status shows that 51.7 per cent are illiterates in Palakkad, Wayanad 37.2 per cent and Idukki 22.5 per cent. Available data gives the information that only 2.4 per cent of tribes in Palakkad district, 0.3 per cent of tribes in Idukki and one per cent of tribes in Wayanad had completed higher secondary education. A majority of them completed only primary school education and it is reported as 60.3 per cent in Idukki, followed by Wayanad 49.2 and Palakkad 31.4 per cent.
5. Employment status gives the information that majority of respondents are agricultural labourers and it is reported the highest in Wayanad district as 30.9 per cent followed by Idukki 27.7 per cent and in Palakkad 27.5 per cent. Others are agricultural and NREGA workers. Agriculturalists are reported the highest in Idukki 14 per cent, followed by Palakkad 6.9 per cent and Wayanad only 3.7 per cent. Remaining tribes are reported as unemployed.

6. Monthly income of the family shows that a majority of respondents' monthly income earns under the range of Rs.2000-4000. And it is reported the highest in Wayanad 58 per cent, followed by Idukki 41.4 per cent and 17.3 per cent in Palakkad. In Palakkad district, 81.4 per cent tribal households are earned income below Rs.2000 only, it is 49.3 per cent in Idukki and 31.3 per cent in Wayanad. Only 10.7 per cent of Kurichyar, 9.3 per cent of Malayarayan and 1.3 per cent of Irular community are earning monthly income of Rs.4000 and above. 54 per cent of the tribal households from three districts together are included in the lowest income category group.
7. More than 95 per cent of the households' monthly food expenditure is less than Rs. 500. It is 89.3 per cent in Wayanad and 52 per cent in Idukki district. 12 per cent of Malayarayans and 8 per cent of Kurichyars spent Rs.1000-1500 of their income for food.
8. Monthly medical expenditure is reported the highest as Rs.2000 and above and it is reported at 19.3 per cent in Idukki and 6.7 per cent in Wayanad district. No tribes in Palakkad district have reported medical expenditure above Rs.1500. And a majority of tribes' medical expenditure reported is below Rs 500. It is reported the highest in Palakkad at 89.3 per cent, followed by Wayanad (78 per cent) and Idukki district(73.3 per cent).
9. Expenditure of the family includes travel, entertainment, alcohol, religious ceremonies and others are reported at 10.7 per cent, 9.3 per cent and 1.3 per cent in Wayanad Idukki and Palakkad and their expenditure category includes above Rs.1500. 32 per cent of tribes in Idukki and 8 per cent of tribes in Wayanad have expenditure ranging between Rs.1000-1500. Remaining tribes in Palakkad district have expenditure ranging between Rs.500-1000. It is reported the highest in Palakkad district (98.7 per cent), followed by Wayanad (80 per cent), Idukki district (58.7 per cent).

10. Debt reported in the tribal family shows that 63.3 per cent of tribes in Idukki district, 36.7 per cent of tribes in Wayanad district and 12 per cent of tribes in Palakkad district have debt in their families.
11. 34.7 per cent of tribes in Idukki district, 23.3 per cent of tribes in Wayanad district and 12 per cent of tribes in Palakkad district reported that their debt is mainly for medical treatment. 13.3 per cent of tribes in Wayanad district reported that their debt was mainly for other expenditures and it is 10.7 per cent in Idukki district. 4.7 per cent of tribes in Idukki district have debt mainly for house construction.
12. Majority of tribes in three districts depend upon other sources like friends and relatives for their debts. It is 36.7 per cent in Wayanad district, followed by 36 per cent in Idukki and 12 per cent in Palakkad district.
13. In Wayanad district, 93.3 per cent of tribal households possess ration cards and all the tribal households in Idukki and Palakkad district reported that they have ration cards.
14. 90 per cent of tribal households in Wayanad district buy rice, sugar and kerosene from ration shops. Remaining 10 per cent in Wayanad district consume rice only. 50 per cent of tribal community in Idukki district consume rice, sugar and kerosene and the remaining 50 per cent consume wheat, rice and kerosene. The situation is different in Palakkad where 19.3 per cent tribe households buy wheat, rice and kerosene from ration shops and 80.7 per cent are consuming rice, sugar, kerosene and atta.
15. In Wayanad only 2.7 per cent receive pension from the government. In Idukki district, it is 36 per cent of them are receiving pensions and in the case of Palakkad district it is only 3.3 per cent.

16. Only 60.7 per cent of tribal households in Wayanad district, almost all the tribes households in Idukki district and 70 per cent of tribal households in Palakkad district are engaged in kudumbashree services.
17. Only 92 per cent of tribal households in Palakkad district, 80.7 per cent in Wayanad district and 56 per cent in Idukki district have land ownership.
18. 64.7 per cent of tribes in Wayanad district 23.3 per cent of tribes in Palakkad district and 18.6 per cent of tribes in Idukki district have owned 5-10 cents of land. Only 16.7 per cent of tribes in Idukki, 6.7 per cent of tribes in Palakkad and two per cent of tribes in Wayanad owned more than 50 cents of land. Lesser land ownership adversely affected their livelihood options.
19. As for the ownership of land, 94.7 per cent of tribes in Palakkad district have owned colony land or Oorubhoomi and they have common document known as 'pattayam" for their land. In the Idukki district it is 44 per cent and 28 per cent in Wayanad district.
20. 81.3 per cent of tribal households in Wayanad district have reported that they have no current assets. In Idukki, it is 78 per cent and in Palakkad it is 55.3 per cent. 44 per cent of tribes in Palakkad district have reported that they have mobile phones. It is 20.7 per cent in Idukki district and 16.6 per cent in Wayanad district.
21. Ranking of poverty among the three districts on the basis of MPI shows that the first rank is given to Palakkad district having MPI 0.505 and its head count ratio is 1 and average intensity of deprivation score is 0.505. The second rank is assigned to Wayanad district and the third rank is given to Idukki district and their MPI values are 0.393 and 0.375 respectively. Head count ratio of Wayanad district is 0.904 and that of Idukki district is 0.865. The average intensity of deprivation of Wayanad and Idukki districts is 0.435 and 0.433 respectively.

22. Ranking of tribes on the basis of MPI shows that the first rank is assigned to the Kattunaikyan community as its MPI score is 0.556, having head count ratio of one and the average intensity of deprivation score is 0.556. So Kattunaikayans are the most deprived among the ten communities. The least deprivation on the basis of MPI is recorded as 0.073 in the Kurichyar community. So the tenth rank is given to this community. Its head count ratio is 0.382 and the average intensity of deprivation score is 0.190, the eight and the tenth ranks are assigned in terms of head count and average intensity of deprivation.
23. The highest mean deprivation score is attained by Kattunaikyan community and their mean deprivation score value is 27.94. So the first rank is assigned to this community. And the tenth rank is given to Kurichyar community as their mean deprivation score is 9.51.
24. Scaling of poverty based on MPI shows that Palakkad district falls under the category of severe or extreme poverty as they are deprived by more than 50 per cent of the weighted indicators and its MPI value is 0.505. Both Wayanad and Idukki have medium poverty and their MPI value is 0.393 and 0.375 respectively.
25. Scaling of poverty based on average intensity of deprivation also shows that Palakkad district is included in the severe or extreme poverty category, having 50.5 per cent. Wayanad and Idukki are included in the medium poverty category having 43.5 per cent and 43.3 per cent respectively.
26. Scaling of poverty based on average intensity of deprivation shows that Kattunaikyan community, Mudugar community and Irular community are included in the severe poverty category, based on average intensity of deprivation as their values are 55.6 per cent, 52.5 per cent and 50.1 per cent respectively. Medium poverty is reported from five tribal communities - Uralikurumar (48.4 per cent), Mannan (46.2 per cent), Muthuvan,(45.8 per cent), Paniya (42.1 per cent) and Adiya (40 per cent). Low poverty households are

Malayarayan community (29.9 per cent) and Kurichyar community (19 per cent) as their average intensity of deprivation falls below 30 per cent.

27. Scaling of poverty among the tribal communities based on MPI value shows three communities under extreme poverty. Kattunaikyan community (55.6 per cent), Mudugar community (52.5 per cent) and Irular community (50.1 per cent). Five communities like Uralikurumar (44.6 per cent), Mannan (43.9 per cent), Muthuvan (39.6 per cent), Paniya (39.4 per cent) and Adiya (34.9 per cent) fall under medium poverty. Lowest poverty households include Malayarayan community (19.4 per cent) and Kurichyar community (7.3 per cent) respectively.
28. On the basis of analysis, it is evident that deprivation score, acute illness and chronic illness significantly discriminate among the tribal communities as their mean deprivation score significance level is 0.000, mean chronic illness significance level is 0.000 and mean acute illness significance level is 0.000.
29. Results of logistic regression show that poverty of the tribal population is mainly associated with educational level of the members in the households. Below primary and primary education shows a significance level of 0.000*. Secondary education shows a significance level of 0.033. Education seems to be having an independent effect on poverty.
30. Age and logistic regression results show that the age group 25- 40 years shows a significance level of 0.000*. This age group is more productive and has a better health status, compared to other age groups. Lower employment level led to poverty due to poor earning capacity.
31. Chronic illness and poverty show below five per cent chronic illness being reported among households. It shows a significance level of 0.002. Acute illness shows that both below five per cent reported households and 5-10 per cent reported households have a significance level of 0.000.

32. Among nine independent variables selected for the study, four variables are statistically significant. Education, age, chronic illness and acute illness are the independent variables showing significance.
33. Mean daily calorie intake of male tribals is reported the highest in Idukki district (1533kcal) followed by Wayanad (1423 Kcal) and in Palakkad (1422Kcal). Among female tribals it is 1348 Kcal in Idukki district, 1274 Kcal in Wayanad district and 1245 Kcal in Palakkad district.
34. Only 3.3 per cent of tribes in Wayanad district and 2.1 per cent of tribes in Idukki district have a daily calorie intake of 2000-2500. The rest of them are consume less than 2000 K calories.
35. Gender and age wise daily calorie intake shows that the lowest calorie intake among males and females is reported the highest among Kattunaikyan community and less among the Kurichyar community and the Malayarayan community.
36. Only 1.5 per cent of tribal communities in Wayanad district have a daily iron intake of 21-25mg . The remaining tribes in three districts consume less than 21 mg of iron daily and their intensity are different in each community.
37. Mean daily intake of iron among males is reported the highest in Kurichyar community as 17.58 mg and the lowest among Kattunaikyan community as 11.91 mg. Among females, it is 15.65 mg in Kurichyar community and 10.04 in Kattunaikyan community.
38. Dwelling units of tribes in both Wayanad and Idukki are owned by themselves except Palakkad where 92.7 per cent of tribes are living in their own houses, 7.3 per cent of tribes are living with others.
39. In Wayanad district, 58 per cent of tribal households are constructed by the government, 36.7 per cent by own construction and 5.3 per cent are constructed

by the government and by themselves. In Idukki district 50 per cent of their houses are constructed by them, 32 per cent are constructed by the government, 9.3 per cent are constructed by taking loan from bank and 8.7 per cent are constructed jointly by the government and with their own fund. In Palakkad district 100 per cent of tribes' households are constructed by ST Development Department (Government).

40. More than 35 per cent of tribes' houses in the wayanad district are made up of Kutcha houses and 64.7 per cent are made up of semi pucca houses. In Idukki district, 50 per cent of tribes live in Kutcha houses and 40.7 per cent in semi pucca houses and 9.3 per cent live in pucca houses. In Palakkad district, 91.3 per cent of them lived in semi pucca houses and 8.7 per cent live in Kutcha houses.
41. Nearly 87 per cent of tribal houses floor are made up of mud in Wayanad district, 8.7 per cent have cement floors and only 4.7 per cent households have tiled floor. In Idukki district, 62 per cent of floors are made of mud and 38 per cent are concreted. In Palakkad district, 30 per cent of household's floors are concrete and 70 per cent are made of mud.
42. A majority of tribal houses have three rooms in Palakkad district, i.e. 91.3 per cent, 63.3 per cent of Wayanad and 40.7 per cent in Idukki district. 50 per cent of houses in Idukki district have two rooms, whereas in Wayanad it is 30 per cent and in Palakkad it is 8.7 per cent. Only 6.7 per cent of Kurichyar tribes in Wayanad and 9.3 per cent of Malayarayan community in Idukki district have four room houses.
43. Only 30 per cent of households in Palakkad district, 18 per cent of households in Idukki district and 10.7 per cent of households in Wayanad district are equipped with separate kitchen.

44. 50 per cent of tribal houses in Idukki district, 48.7 per cent of houses in Wayanad district and 8.7 per cent in Palakkad district have less than 500 sq. feet houses, 50 per cent of houses in Idukki, 91.3 per cent in Palakkad and 44.7 per cent of houses in Wayanad district have 500 sq feet houses. Only 6.7 per cent of Kurichyars have more than 500 sq. feet houses.
45. All the tribes in Idukki and Palakkad districts and 95.3 per cent of tribal households in Wayanad district use firewood and chips for their cooking.
46. Only 62 per cent of tribes' houses in Palakkad district 46.7 per cent of tribe houses in Idukki district and 43.3 per cent in Wayanad district have availability of electricity in their houses. The remaining use candles and kerosene.
47. 62 per cent of households in Wayanad district and 46.7 per cent of households in Palakkad district depend on 'Jalanidhi' for water. In Idukki district 100 per cent of tribal households depend on spring for drinking water. Other drinking water sources in three districts are common pipe, common well and common pond.
48. In Palakkad district, 94 per cent of households needed to travel less than 1 km for availing drinking water. In Wayanad it is 21.3 per cent. In Idukki district 96.7 per cent of them needs to travel 1 to 2 km for collecting water from spring and in Palakkad it is 6 per cent.
49. Most of the tribal communities have reported that their quality of water available is only satisfactory level. As they are not very efficient in analysing their quality of drinking water.
50. Mean chronic illness is reported the highest by Uralikurumar community as 6.61 and the least is reported by Malayarayan community as 2.67
51. Mean acute illness is reported the highest by Muthuvan community as 7.56 and least is reported by Kurichyar community as 2.94.

- 52 Variables like deprivation score, acute illness and chronic illness are included in the analysis and the overall model fit is statistically significant and all variables included in the function have significantly higher value of F to remove.
- 53 On looking into tribal communities, the first function primarily distinguishes Kattunaikyan community's mean deprivation score from that of other tribal communities. Second function also discriminates Kattunaikyan community from other tribal communities in terms of acute illness and chronic illness. Marked differences could be observed between deprivation score, chronic illness and acute illness among various tribal communities. Second function also separates deprivation score from chronic illness and acute illness. So functions are almost the same in their capacity to discriminate the tribal communities under study.
- 54 Mean deprivation score and variables, such as tribes, district and chronic illness show that tribal communities have significant relationship with mean deprivation score of the respective households. As p value shows a significant level of 0.000* and chi-square shows a value of 9.016. There exist district-wise differences in deprivation among various tribal communities. As district-wise analysis reported a significance level of 0.000* and their respective chi-square value is 2.135. Chronic illness and mean deprivation score of each households show 0.000* significance level. Acute illness and tribes has significant relation showing P value of 0.000*. District- wise and acute illness have considerable differences among three district included in the study having P value of 0.000*.
- 55 Information from the factor analysis shows that education, age, and deprivation score are the variables related to health status. As the total Eigen value of education and health status is 1.782, age and health status 1.287, deprivation score and health status 1.220. All the three variables, Eigen values calculated are greater than unity.

- 56 Communicable diseases are most rampant among Kattunaikyan, Muthuvan, Mannan, Irular and Mudugar communities and the lowest among Kurichyar community and Malayarayan community.
- 57 Permanent illnesses are mostly reported from Adiyas, Kattunaikyans, Paniyas, Uralikurumar and Kurichyar communities in Wayanad district. In Idukki district, it is mostly reported from Muthuvan, Mannan and Malayarayan communities and in Palakkad district both Irular and Mudugar communities reported the same.
- 58 Secondary data from Thirunelli grama panchayat report (2013) reveals that sickle cell anaemia, one of the genetic disorder diseases is reported from among 57 per cent among Adiya community, 19.6 per cent among Kattunaikyan community, 17.9 per cent among Uralikurumar community, 3.6 per cent among Paniya community and 1.8 per cent among Kurichyar community.
- 59 Age-wise distribution and morbidity show that communicable diseases mostly strike up to 15 years of age. It is reported the highest in Palakkad district (90.5 per cent), 86.2 per cent in Idukki district and 84.8 per cent in Wayanad district. Non-communicable diseases are mainly reported from 31 years and above, but its severity was the highest in the age group of 46-60 and 61 to 75 years. Under the age group of 46-60 it is reported the highest in Idukki, i.e. 100 per cent followed by Wayanad (98.5 per cent) and 96 per cent in Palakkad district. Only limited number of tribal population is reported under the age group of 61-75 years and non-communicable diseases are reported 100 per cent in Wayanad and Idukki and 96 per cent in Palakkad district.
- 60 Details of sickle cell anaemia show that 50 per cent of it is reported under the age group of 18-49 years, followed by 32.1 per cent in 6-12 years, 8.9 per cent in 12-18 years, 5.4 per cent in 1-5 years and 3.6 per cent in 50-60 years.

- 61 Gender-wise analysis shows that 57.1 per cent of sickle cell anaemia is reported among females and 42.9 per cent among males.
- 62 Use of cigarettes is reported the highest in Palakkad district (46.1 per cent), followed by Idukki (28.1 per cent) and in Wayanad (28 per cent). Alcohol and other intoxicants are also reported highest in Palakkad district 63.7 per cent, 28 per cent in Wayanad and 27.7 per cent in Idukki district.
- 63 Only 18.7 per cent of tribes in Idukki, 14 per cent in Wayanad and 3.3 per cent of tribes in Palakkad district have used boiled water for their consumption. 67.3 per cent of tribes in Wayanad, 64.7 per cent of tribes in Palakkad and 57.3 per cent in Idukki district rarely used boiled water for their drinking.
- 64 54.7 per cent of tribes' households in Palakkad, 43.3 per cent of tribal households of Wayanad, 18 per cent of Idukki district have bath room facility in their houses.
- 65 Even though they have bath room facilities 82 per cent of tribes in Idukki, 64.7 per cent of tribes in Palakkad, 38 per cent of tribes in Wayanad district have to depend upon other sources for their bath like ponds, canals etc.
- 66 52.7 per cent of tribes in Palakkad district, 43.3 per cent in Wayanad and 18 per cent of tribes in Idukki district have latrine facility in their houses. But 87.3 per cent of tribes in Palakkad district, 82 per cent of tribes in Idukki district and 56.6 per cent of tribes in Wayanad district use pit as their toilets.
- 67 Only 21.4 per cent of tribal households have toilets in Wayanad district and 4.7 per cent in Palakkad district are hygienic. Other defects noted are lack of water availability, door facility and roof facility. 94.6 per cent of tribal households in Palakkad district, 82 per cent in Idukki district and 62.6 per cent in Wayanad district are using unhygienic toilets.

- 68 In Wayanad district, 52 per cent of tribal communities are reportedly suffering from communicable diseases, 45.8 per cent have non communicable diseases and 2.2 per cent have reported genetic disorder diseases. Genetic disorder diseases are not recorded in Idukki district. 50.8 per cent of communicable diseases and 49.2 per cent of non-communicable diseases are reported. In Palakkad district, 48.7 per cent of communicable, 49.8 per cent of non-communicable and 1.5 per cent of genetic disorder diseases are reported.
- 69 47.8 per cent of tribes in Wayanad district, 41.5 per cent of tribes in Idukki district and 43.2 per cent of tribes in Palakkad district have permanent illness. 40.3 per cent of tribes in Palakkad, 38.1 per cent of tribes in Idukki, 20 per cent of tribes in Wayanad district have reported frequency of illness more than once in a month.
- 70 Period of ailment shows that 67.3 per cent of tribes in Wayanad district, 57.9 per cent of tribes in Idukki district and 48.3 per cent of tribes in Palakkad district have short term ailment. 32.7 per cent in Wayand, 42.1 per cent in Idukki and 51.7 per cent in Palakkad district have reported long term ailment.
- 71 Only four per cent of tribes in Wayanad, 6.1 per cent tribes in Idukki and 3.8 per cent of tribes in Palakkad were hospitalised during the period.
- 72 Only 41.9 per cent of less than 5 years old children in Idukki district and 6.4 per cent in the Palakkad district have taken complete vaccination. 55.7 per cent of children in Wayanad district, 53.2 per cent in Palakkad district and 38.7 per cent in Idukki district have not. Remaining children received only partial vaccination.
- 73 More than 92 per cent of women in Palakkad district, 89.6 per cent women in Idukki district and 86.3 per cent of women in Wayanad district reported that they have completed pregnancy in their age group of 18-49 years.

- 74 45.6 per cent of tribes in Wayanad, 17.8 per cent of tribes in Palakkad and 11 per cent of tribes in Idukki district have delivered their children at their home itself. Remaining tribal women depend upon government hospitals for their delivery.
- 75 Birth interval of their children shows that 16.4 per cent of tribes in Palakkad, 13.6 per cent of tribes in Idukki and 16.5 per cent of tribes in Wayanad districts have only one child. Only 48.7 per cent of tribes in Palakkad district, 45.5 per cent of tribes in Idukki district and 31.1 per cent of tribes in Wayanad district have 2 years and above birth intervals for their children. Remaining have birth interval gap of only one or two years.
- 76 61.8 per cent of women in Palakkad district, 55.2 per cent of women in Idukki district and 48.6 per cent of women in Wayanad district have fed their first child up to 2 years. Remaining women have breast fed their children for less than two years. Lack of sufficient breast milk is the main reason for stopping feeding.
- 77 9.5 per cent of tribal women in Wayanad, 8.9 per cent of tribal women in Palakkad and 6.7 per cent of tribal women in Idukki district had abortion during their pregnancy.
- 78 Majority of tribal women in Wayanad reported that abortion is due to their poor health condition, Underweight of the baby and lack of medical care are other reasons.
- 79 38.9 per cent of women in Wayanad, 15.7 per cent of women in Palakkad and 9.3 per cent of women in Idukki district did not receive any maternity services. 79.6 per cent of women in Idukki, 75.1 per cent of women in Palakkad and 47.4 per cent of women in Wayanad have received post natal care. Only 0.6 per cent of women in Idukki and 1.2 per cent of women Palakkad have received pre natal services during their pregnancy.

- 80 75 per cent of tribes in Idukki district, 50.7 per cent of tribes in Wayanad district, and 29.7 per cent of tribes in Palakkad district's children less than 5 years of age are going to anganwadis.
- 81 Available data shows that all the people above 65 years have physical mobility.
- 82 Mortality during the last 5 years shows that 65.2 per cent of 64 years and above tribal population in Wayanad, and 15 per cent of tribal population of the same age group in Palakkad have died during the period. Less than 5 years of age children's mortality was reported only in Palakkad district as 15 per cent. 30 per cent under the age group of 11-17 years, 15 per cent under the age group of 18-49 years and 25 per cent under the age group of 50-64 years are reported in Palakkad district. In Idukki district, 80 per cent mortality was reported under the age group of 18-49 and 20 per cent under the age group of 50-64 years. From 2013 to December 2018 around 134 cases infant mortality were reported in Attapadi.
- 83 ICDS survey report 2013 pointed out that 32 Irular infants, 6 Mudugar infants and 2 Kurumbar infants died during the period.
- 84 Out of the 32 infants of Irular community, 20 infants lived up to one month. 10 infants from Irular community lived up to 2-12 months. Only two infants have died during one year. In the case of Mudugar community four infants lived up to one month, two children for two years and two infants from Kurumbar community also died during the period.
- 85 The highest number of IMR is reported due to pre term birth, premature delivery and acute respiratory diseases syndrome. Broncho pneumonia, pneumonia and anaemia, food aspiration, intra uterus growth retardation, development delay growth retardation, abdominal vomiting, pre mature low birth and heart complaint, heart problem, acute respiratory diseases syndrome, aspiration pneumonia, etc. are other factors responsible for IMR.

8.2 Conclusion

The study reveals that there is differences in socio-economic status across different tribal communities. Therefore, attempt to eradicate poverty and improve in health status is to be addressed on a priority basis. Eventhough the various schemes were implemented, its benefits are not reflected in the life of tribals. Mortality and morbidity rates are high and is attributed to poor standard of living. The IMR in Attapadi region is very high is a concern to be addressed. Policy measures to meet this need to be taken after considering the variation across all sections of tribal communities.

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8	Type of floor Tiled-1,Cemented-2,mud-3	
9	Type of roof Concrete-1,Tile-2,Thatched-3,others-4	
10	No: of rooms available in the house 4 rooms-1, 3rooms-2, 2 rooms-3,1room-4	
11	Is there any separate kitchen? Yes-1,No-2	
12	How many square feet Less than 500 sq ft -1, 500 sq ft-2 ,500-1000sq ft-3, Morethan 1000sqft-4	
13	Primary source energy for Cooking: Electricity-1, LPG-2, Gobargas-3,Kerosine-4,Fire wood &chips-5,Others-6 Lighting: Electricity-1,Candle-2,Kerosine-3,No lighting arrangement-4, others-5	
14	Major source of drinking water Commonpipe-1,Commonwll-2,Jalanidhi-3,river- 4,Neerurava-5,commonpond-6,others-7	
15	Whether availability of drinking water is sufficient throughout the year: Yes-1, No-2	
16	Distance to the source of water Within dwelling-1, Outside dwelling but within the premises-2,Out side premises less than 1 km -3,outside premises between 1km to 2km-4,Outside premises between 2km to 4km-5,outside premises more than 5km-6	
17	Quality of water Good-1, satisfactory-2, not good-3,not known-4	
18	Whether use boiled water for the consumption Yes-1, No-2, Rare-3	
19	Whether any bathroom: yes-1, no-2	
20	Bath room: Attached-1, Detached-2 ,No bathroom-3	
21	If no from where you take bath: Bath room-1,Community taps-2,open space-3,Rivers- 4,Others-5	
22	Whether latrine facility: Yes-1 No-2	
23	If yes which type of latrine Private latrine-1,community latrine-2,pit-3	
24	Condition of latrine Hygenic-1 ,Not hygienic-2,Lack of water availability-3, Others-4	
25	Does the household possess a Ration card Yes-1 ,No-2	
26	If yes which type of Ration card APL-1,BPL-2,Others-3	
27	Whether any members have 100 days job support card Yes-1,No-2	
28	How many members have election identity card?	
29	Whether any members get pension ?	

	Yes-1, No-2 If yes, state type of pension	
30	Whether any members have membership in co-operative credit society or insurance company? Yes-1, No-2	
31	Whether household is related to any kind of kudumbashree services? Yes-1, No-2	
32	Whether any of the members faced any kind of cruelty from any one? Yes-1, No-2 If yes State Reason:	
33	Whether any members have owned land Yes-1, No-2	
34	If yes how many cent/ acres: Less than 5cent-1, 5cent-10cent-2, 10cent-50cent-3, 50cent-1acre-4, More than 1acre-5, No land-6	
35	Type of ownership of land do you have Colony land-1, Ownership land-2, Pattam-3, By means of hereditary-4	
36	Whether family faced any threatening from wild animals? Yes-1, No-2	

IV Food and Expenditure

		Break fast		Lunch		Dinner	
		Item	Quantity	Item	Quantity	Item	Quantity
37	Whether all the members consumed food? At any time-1, Once a day-2, Twice a day-3, Thrice a day-4						
38	Whether you are consuming any items from Ration shop? Yes-1, No-2						
39	If yes, state the items						

Details of Food Consumption in your Household Ended on.....

Item	Code	Daily consumption	Weekly	High	Moderate		Low
		Quantity	No: of days consumed	4 weeks consumption	3-2 weeks	Once in a month	Not consumed
1	2	3	4	5	6	7	8
Cereals & Cereals products							
Pulses & Pulse products							

Milk & Milk products							
Oil, sugar & salt							
Egg, Fish & Meat							
Vegetables & Leafy vegetables							
Fruits (Fresh & Dry)							
Roots & Tubers							

Source code: *only purchase -1, only home-grown stock -2, both purchase and home-grown stock -3, only free collection -4, By means of Asrya project-5, only exchange of goods and services -6, only gifts / charities 7*

Collection from forests-8, others-9

40	Does any in the house hold own any of the following items?	
	Radio -1	
	Television -2	
	Telephone/Mobile-3	
	Bike -4	
	Bicycle -5	
	Car/Truck -6	
	Refrigerator-7, Television & mobile-8, No current assets-9	

V Health Aspects

41	Whether your family get services from Govt hospitals? Yes-1 No-2	
42	Whether any members in your household use cigarrattes? Yes-1, No-2	
43	Whether any members use alcohol or other intoxicants Yes-1, No-2	

Details of morbidity among house hold members

43	Whether any members face any kind of following illness ? Yes-1 ,No-2 If yes state : Physical illness: Mental illness: Permanent illness :	Age	Take any medical treatment	Type of hospital used
44	Whether they face any difficulty in performing day to day Activities?. Difficulty existed-1, No difficulty-2, Depend on thers-3, Ley on bed -4			
45	Whether any members in the household had following type of morbidity within last 30days ?			
	Communicable diseases			
	Measles: Yes -1 No-2 , Pneumonia : yes-1 No-2, Diarrheal diseases: Yes-1 No-2			
	Polio: Yes-1 No-2, Malaria:Yes-1 No-2, Tuberculosis:Yes-1 No-2			
	Influenza:Yes-1 No-2 , Mumps:Yes-1 No-2, Chickenpox:Yes-1 No-2			
	Hepatitis A:Yes-1 No-2, Hepatitis B: Yes-1 No-2, Hepatitis C:Yes-1 No-2			
	Chickenpox:Yes-1 No-2, AIDS: Yes-1 No-2, Typhoid:Yes-1 No-2			
	Cholera: Yes-1 No-2 Fever:Yes-1 No-2, Cough: Yes-1 No-2			
	Cold: Yes-1 No-2, Others			
	Protein Energy Malnutrition related diseases			
	Marasmus:Yes-1 No-2, Kwashiorkor:Yes-1 No-2, Anaemia:Yes-1 No-2			
	Goitre: Yes-1 No-2, Xerophthalmia:Yes-1 No-2 , Rickets: Yes-1 No-2			
	Genetic Disorders Diseases			
	Sickle-cell Anaemia:Yes-1,No-2, Albinism:Yes-1 No-2			
	Phenylketonuria:Yes-1 No-2, Colourblindness:Yes-1 No-2			
	Haemophilia:Yes-1 No-2, Congenital night blindness: Yes-1 No-2			
	Alzheimers diseases: Yes-1 No-2			
	Non Communicable diseases			
	Diabetes:Yes-1 No-2, Asthma:Yes-1 No-2, Blood pressure:Yes-1 No-2			
	Heartdiseases:Yes-1 No-2, Cancer:Yes-1 No-2, Rheumatoid Arthritis: Yes-1 No-2,			
	Diseases of Kidney/urinary system: yes-1 No-2 , Gynacological disorders:yes-1 No-2 Psychiatric disorders:yes-1 No-2			
	Accidents/Injuries/burns :Yes-1 No-2			

	Others	
46	Prevalence rate/Frequency of illness Once in a week-1, Once in 2 weeks-2, Once in 3 weeks-3 Once in a month-4, Twice or more in a month-5, Permanent illness-6, sudden incident-7, twice in a year-9, rarely-10	
47	Type/Period of ailment: short term-1, Long term-2	
48	Any members are hospitalised during last 30 days? Yes-1 No-2	
49	Type of hospital: Govt hospital-1, private hospital-2, Hereditary treatment-3	
50	Duration of stay in hospital 1 week-1, 2 weeks-2, 3 weeks-3, 4 weeks-4, More than 4 weeks-5	
51	Cost of hospitalised treatment	
52	Source of fund for hospitalised treatment House hold income-1, borrowing-2, Others-3	
53	Cost of not hospitalised treatment	
54	Loss of household income for medical expenses in the family: Above 10,000-1, 10,000-5000-2, 5000-1000-3, Below 1000-4	

Details of Women, Children & Aged persons (65 & above)

55	Whether children less than 5 years received all necessary Vaccination: complete vaccination-1, partial vaccination-2 Not received any vaccination-3	
56	Whether women aged 18-49 who had given birth to children: yes-1, No-2	
57	If yes, place of birth: Govt hospital-1, private hospital-2 At home-3, other places-4	
58	Birth interval of children	
59	How many months did you breast feed your first child? And why did you stop breast feeding?	
60	Women faced abortion any time: Yes-1, No-2	
61	Reason for abortion: Due to ill health condition of mother- 1, low weight baby-2, lack of medical care-3 others-4	
62	Women aged 18-49 get all maternity services from Govt or related department Yes-1, No-2	
63	Whether children aged less than 5 years are going to anganwadi? Yes-1, No-2	
64	Whether children & pregnant women get any nutritional food from anganwadis? Yes-1, No-2	
65	Whether aged persons (65 & above) have physical mobility? Mobile-1, Confined to bed-2, Confined to home-3	
66	Whether any children/other members in the household had died during last 5 years : Yes-1, No-2 If yes: Specify Age: Relationship with head: State reasons for mortality:	

PUBLICATIONS

- "Morbidity Pattern of Tribes in Kerala" (IOSR-JHSS) P-ISSN: 2279-0845 Vol.21, Issue 4, Version -3, April 2016.
 - "Socio Economic Conditions of Tribal Communities in Kerala- An Inter District Analysis" (IJRAR) E-ISSN 2348-1269, P-ISSN 2349-5138 Vol.5, Issue 3, September, 2018.
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