

Chapter 16

Nutrition, Lifestyle and Health Status Among Tribal Communities: A Case Study of Particularly Vulnerable Tribal Group of Kerala



K. Gowri Priya and Lekha D. Bhat

Abstract Tribal populations, in general, are generally lagging behind in social-economic spheres of lives as they are at different stages of social and economic development compared to the remaining population. Health and nutritional inequities are higher among tribal population in our country. Poor relationship with environment, undernutrition and newly acquired lifestyle factors makes them very vulnerable compared to the general population. The review exercise showed that nutritional status and factors associated with geographical variations were not studied especially among the particularly vulnerable tribal groups in Kerala. Hence, this study was conducted to develop the bio profile of *Kattunayakan* tribes in Kerala and associate their nutritional status with several factors along with their health-seeking behaviors. The study followed a community-based cross-sectional approach using a mixed- method, which is both qualitative and quantitative in nature. The field survey was conducted in Wayanad district in Kerala where more than 85% of the Kattunayakans' population lives. The sample size is calculated as 238. The Kattunayakan community has always been deprived of creche and basic facilities, which has forced them to remain underdeveloped in most aspects of life. The findings of this study have shown a steady social and nutritional transition among the tribes. The determinants that affect the nutrition status most are education, occupation, income, housing conditions and lifestyle. An overall improvement in the quality of life by improving determinants like education, occupation and access to health care is suggested to improve the nutritional status and health indicators of the community.

Keywords Nutrition · Health status · Lifestyle · Tribes · Kerala

K. Gowri Priya · L. D. Bhat (✉)

Department of Epidemiology and Public Health, Central University of Tamil Nadu, Thiruvavur,
India

e-mail: lekhabhatd@gmail.com

16.1 Introduction

India is a land of co-mingling culture and people with diverse religious, linguistic and socio-economic backgrounds. The tribal population is 10.45 crore accounting for about 8.6% of the total population (Government of India 2011). There are about 635 tribal groups residing in the urban and rural parts of India. Among them, the groups with prevailing primitiveness having a declining population, low economy and literacy rates and still following pre-agricultural level of technology are termed as Particularly Vulnerable Tribal Groups (PVTGs) (Ghosh-Jerath et al. 2018). There are about 75 PVTGs in India with the majority of them located in the northeast and central India (Census of India 2011).

Tribal populations, in general, are generally lagging behind in social-economic spheres of lives as they are at different stages of social and economic development compared to the remaining population. They lag far behind the general population with low socio-economic and participatory indicators as most of them are caught up in the vicious cycle of poverty. This has significantly affected their living condition and health standards.

Health is one of the most important factors that affect the quality of life. With a score of 27.2, India is classified as a country with a level of serious hunger in Global Hunger Index (GHI) (Global Hunger Index 2020).

Nutrition transition, i.e., overnutrition and undernutrition, is a major problem in the country. In that case, undernutrition is notably high in rural areas with a majority of it reported from the tribal population. Malnutrition is widely reported which usually leads to an impact on the disease pattern, morbidity and mortality. Tribal groups in general have their own system, which includes diagnosis, treatment and cure of illness. Socio-economic backwardness coupled with barriers in accessing health care increases their reluctance to reach out to the health care system widely used in the country. So, their nutrition and lifestyle have a significant impact on their health and nutrition.

16.2 Literature Review

The health status of every community is determined by the availability of nutritional food and access to health care. Apart from this, traditions and beliefs play a major role in determining the health of a community, and this stands true especially for the tribals. In general, the health status of tribals in the country is poorer, and health indicators are not promising (Bagai and Nundy 2009). Health inequities among tribal populations are at higher rates than the general population (Das and Bose 2015). Social stratification and marginalization of society with a high prevalence of low weight and anemia are reported among indigenous population compared to non-indigenous population (Haddad et al. 2012).

In India, 50% of adults in scheduled tribes have reported being undernourished with low BMI. The prevalence of chronic energy deficiency is reported in 60% of tribal communities in India, and this is 37.8% in Kerala. Haddad et al. (2012) state that educational and socio-economic levels of tribal and general population are so different that it has a significant difference in the burden of morbidity. Social exclusion and ethnicity-based discrimination add to the burden. Health inequalities are also seen within the tribes as the needs for each group are different.

Tribes live in harmony with their ecosystem making earnings and consumption from nature. Hence, the geographical and ecological conditions predominantly determine the living conditions of the tribal people. Health of any individual or group is directly related to the nutritional status and access to the health services. Our country has a dual burden of overnutrition and undernutrition prevailing known as the nutritional transition phase. Though recent studies have shown improvement in nutrition status, undernutrition still prevails largely in rural tribal communities (Sinha 2018).

Poor relationship with environment, undernutrition and lifestyle factors is the three major reasons affecting the health status of tribal communities (Deodhar 2000). Other factors such as genetic diseases, sexually transmitted diseases, food and nutritional intake and health services used by the tribes also play a major role in deciding health status of tribes (Bisai and Bose 2012). The need to integrate the traditional medical practitioners with modern health services is observed among tribal villages in Central India (Mishra 2012).

In a study conducted among reproductive age Oraon Tribal Women of Jharkhand, India, it was found that even with availability and adequate knowledge, the consumption rates of nutritious food are low. The indigenous food was analyzed and found with a high nutritive value which used properly can steadily improve the nutrition status of the group. Behavior change communication is suggested to increase the nutrition consumption from their natural diets (Ghosh et al. 2012).

Anemia is also seen in the majority of the women which can be the result of worm infestation due to open defecation practices (Kankana 2017). Tribal lives in close association with their ecosystem as they find daily food requirements from nature around them. But the seasonal changes influence them as they have plenty of food at times and very few at the other. It is important to promote settled agriculture and prevent shifting cultivation for improving food habits and ensuring nutritional intake among tribal groups (Panda 2003).

The population explosion and poor access to higher education are identified as important causal factors for poor nutritional status and health outcomes among various tribal societies in the country (Deka 2011). Among the tribal women, the usage of tobacco is high, and due to tobacco use, the quantity of food intake is drastically reduced especially among educated tribal women, as they want to remain skinny. The educational levels were not having a strong association with the nutritional status (Mohandas et al. 2019). Among the Purulias, high infant mortality rate (IMR) and maternal mortality rate (MMR) are observed which are attributed to poor childbirth and nutritional standards (Sikdar 2009).

Kerala has 34 tribal communities spread across predominantly in Wayanad, Idukki, Kasaragod and Palakkad districts. The scheduled tribes account for only

1.8% of the population of the state. Wayanad district accounts for about 35.8% of the total tribal population in the state (Government of India 2013). Kattunayakans who are listed as one among the particularly vulnerable tribes reside in the districts of Wayanad, Kozhikode and Malappuram with a listed population size of 18,886 (Government of India 2011). They are primarily hunters and food gatherers practicing shifting cultivation and other forest-based activities. The nutritional status-related issues are persisting in both sexes among tribal children in Kerala (Vipin 2009). The findings of another study revealed that the severe stress of infant and childhood undernutrition is the reason leading to higher adult malnutrition levels especially among the vulnerable tribal populations. For marginalized communities, these issues add up further hindering their development (Kshatriya and Acharya 2016). The high use of tobacco, severe undernutrition and lack of basic oral health care access has increased the oral disease burden in the Paniya community (Valsan et al. 2016). The prevalence of skin diseases, sexually transmitted infection and reproductive tract infections is higher among various tribal groups in Kerala. The lack of awareness and medication has further deteriorated their health.

16.3 Methodology

As we developed the literature review, we found various health problems but that the nutritional status and factors associated with geographical variations were not studied, especially among the particularly vulnerable tribal groups in Kerala. Hence, this study was conducted to develop the bio profile of *Kattunayakan* tribes in Kerala and associate their nutritional status with several factors along with their health-seeking behaviors.

The study followed a community-based cross-sectional approach using a mixed-method, which is both qualitative and quantitative in nature. A qualitative method was used for a thorough analysis of their knowledge, practices and factors influencing the nutritional status of the Kattunayakan tribal population. Quantitative analysis was used to find the current nutritional status and association with these factors. Kattunayakans belonging to the active and independent age group of 15–59 years of age forms the population of this study. The field survey was conducted in Wayanad district in Kerala where more than 85% of the Kattunayakans' population lives. The sample size calculated using epi info stati calc for population surveys with 90% confidence interval and 5% margin of error. The population of Kattunayakans is 18,886, and hence, the sample size is calculated as 238. Simple random sampling technique is employed to select settlements and the respondents for the study. Local leaders and ST promoters are also interviewed at a later part of this study. In this study, the collected data was coded and entered to MS Excel and then analyzed using SPSS 26.0 software in form of frequencies and corresponding percentage values using the descriptive statistical features. Chi square test was also conducted to interlink some of the variables and find the correlation between them. The level of statistical significance was set at *p-value* less than 0.05.

16.4 Results and Major Findings

With community-based cross-sectional study, a total of 238 responses were collected from various Kattunayakan colonies in Wayanad district of Kerala. The results from the study are illustrated in the form of various tables and figures.

16.4.1 *Socio-Demographic and Economic Profile of the Tribes*

The demographic data shows that among the respondents, all the age groups and gender were covered almost equally in the study. The majority of respondents were currently living as a nuclear family type. The family members range between 1 and 9 showing a small household in general. The family usually consists of father, mother and unmarried children. The married males try to stay in the same settlements mostly. 36% of the respondents were illiterate, and only 6% had reached at least higher secondary level of education. Majority of the population (52.9%) are working as wage laborers. Kattunayakans are primitive groups that settle close to forest, hence making them forest dependent for income and food. 19.3% still depend on forest for income by collecting honey, a special type of fungi grown in trees and bamboo seeds. Only a 5% of the respondents were engaged in government jobs that too of the lowest cadre. The annual income of the respondents is majorly in between Rs. 25,000/- and Rs. 50,000/- which means the average income in month is around Rs. 6000/-. The daily income is around Rs. 200/-. This meager amount of income they earn shows the poor manual labor conditions. The real poverty-stricken face of the community is revealed through these. All the observed members were belonging to the BPL wealth index. About 82.8% of the population households have electricity either through direct connection or solar provided by the government. About 19.3% of the population finds means of livelihood by collecting forest resources whose sole mode of travel seems to be walking. Only 2.5% of the population uses other means of vehicles like two-wheelers (motor bikes). 68.1% of the population uses flush toilet, most of them build separately behind the house. Most of the settlements have common well from which the population accessed water for household and drinking purposes. Most of the households have pipe connection but few still choose to fetch water directly from the well. 92% of the population uses boiled water for drinking, preventing various water-borne diseases among them. 58.4% of the population still uses firewood for cooking purposes. Only 14.7% have LPG connections.

Other indicators related to housing conditions are shown in Table 16.1.

Table 16.1 Housing conditions of the tribes

Particulars	Categories	Frequency	Percentage
Type of house	Kutchha	12	5.0
	Pucca	161	67.6
	Semi pucca	65	27.3
Type of toilet used	Pit toilet	40	16.8
	Flush toilet	162	68.1
	Open defecation	36	15.1
Source of energy for cooking	Firewood	139	58.4
	Kerosene	64	26.9
	LPG	35	14.7
Mode of travel	Walking	82	34.5
	Bus	150	63.0
	Other vehicles	6	2.5
	Total	238	100.0

16.4.2 Consumption Patterns

Rice is the staple food of the population. Rice is consumed as porridge mostly two times a day. The diet followed by the population is predominantly nonvegetarian. But they consume eggs or meat or fish mostly just once a week. Most of them report two meals a day.

The lack of a proper diet can have an impact on their nutritional status. The majority of them breakfast during the late hours of morning when they leave for work. They skip lunch and have only black tea during the evenings at work. At times, they have some tubers or roots collected at evening times but they usually prefer to save them for later use. It is during dinner time they consume some form of pulses or vegetables available.

There are various government provisions for food provision to them. Majority of the parents sent their kids to school. The kids have midday meal provisions at school which is availed by about 65% of the school-going kids. The part of the population (0–6 year children, pregnant women) eligible for anganwadi services for food and nutrition requirements receive them regularly.

About 31.1% of the population, the majority of them who are men consume alcohol on a daily basis. Most of them consume some form of arrack prepared in their settlements which often has led to liver sorosis especially among men aged 45 years and above.

Tobacco chewing is part of their cultural tradition. Irrespective of age and gender, about 75.5% of the respondents use tobacco. Tobacco consumption has a significant effect on the health and nutrition status of the population as the hunger feeling is suppressed, and food intake happens at irregular intervals. 36% of the respondents report frequent ulcers, whereas 34% report persistent gastric issues.

16.4.3 Knowledge and Practices Related to Nutrition Consumption and Food Hygiene Among the Respondents

The knowledge assessment regarding prevailing nutritional practices among the respondents showed that more than half of them have satisfactory awareness and functional knowledge about the basic needs. They are also well aware of nutritious benefits of milk and milk products and the need for consumption. But contradictorily, majority of the population do not consume them on daily basis mainly because of economic constraints and lack of availability (Table 16.2).

Meat consumption on daily basis is not preferred. About 41.1% of the respondents believe meat consumption must be restricted to once a week. 67.5% of the population is aware of the need to have high iron-rich food for women.

Various practices that impact nutritional and health status have been assessed. Only 57.6% of the population used boiled water alone while 35.3% tend to drink any unboiled water. A significant number of the population regularly wash hands before food consumption. Due to their economic status, the consumption of fruits is very low. Only 19% of the population has consumed fruits regularly. All of them practice closed cooking, thereby reducing the energy source utilization. Regarding the sleep pattern, 84.9% of the population has normal sleeping hours of about 6–8 h. Hardly

Table 16.2 Knowledge regarding the nutrition among the tribes

Particulars	Categories	Frequency	Percentage
Amount of water we should drink in a day	< 1 l	20	8.4
	2 l	181	76.1
	3 l	36	15.1
	> 4 l	1	0.4
	Total	238	100.0
Milk and products good for health	Yes	236	99.2
	Do not know	2	0.8
	Total	238	100.0
Daily meat consumption recommended	Yes	112	47.5
	No	97	41.1
	Do not know	27	11.4
	Total	236	100.0
Iron-rich food to be consumed by women	Spinach	160	67.5
	Banana	27	11.4
	Rice	1	0.4
	Grapes	49	20.7
	Total	237	100.0

Table 16.3 The various practices followed by the respondents

Particulars	Categories	Frequency	Percentage
Drinking water	Boiled	137	57.6
	Unboiled	17	7.1
	Either	84	35.3
Washing hands before consuming food	Yes	233	97.9
	No	3	1.3
	Maybe	2	0.8
Consumption of fruits the day before	Yes	45	19.0
	No	192	81.0
Washing of vegetables	Before peeling and slicing	185	77.7
	After peeling and slicing	53	22.3
Open or closed cooking	Closed pan	238	100.0
	Total	238	100.0

8% of the population has reduced sleep of fewer than 6 h which has a significant impact on their health (Table 16.3).

16.4.4 Anthropometric Measures

The anthropometric measure is used to study, assess and analyze the nutritional status of the individuals. BMI is the most significant anthropometric measure used calculated from the weight and height of an individual (Fig. 16.1).

Here as we observe that the majority of the population belonged either to the underweight or normal weight category. About 40.3% of the population still belongs to the underweight category. This can be due to various reasons. Only 7.6% of the community belongs to the pre-obesity category. Both underweight and pre-obesity show unhealthy nutritional status (Fig. 16.2).

Nutrition deficiency signs are seen in some of the respondents of which the most common sign is angular stomatitis (20.6%), followed by pallor (13.9%) and bitot spots (13.9%). Both age and nutrient deficiency can influence the signs shown (Fig. 16.3).

Majority of the population shows poor oral hygiene. Oral hygiene signs such as DMF teeth are very common in about 74.4% of the population. This can be attributed to the tobacco chewing habit among them.

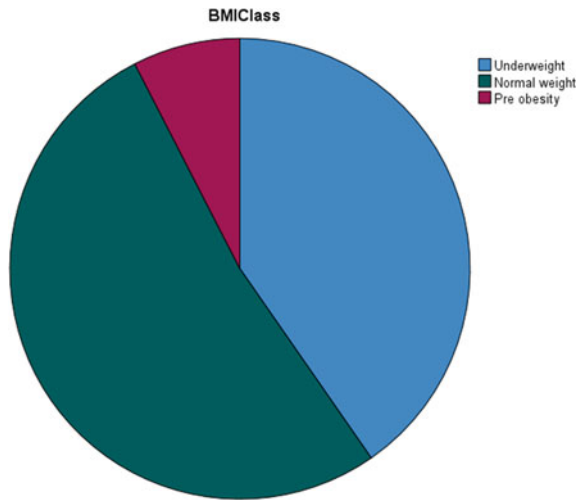


Fig. 16.1 BMI status of the tribes

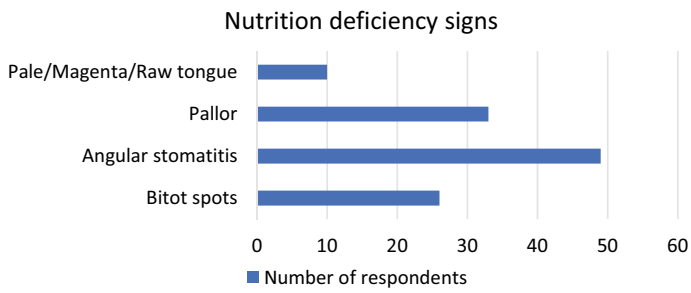


Fig. 16.2 Nutritional deficiency signs observed in the tribes

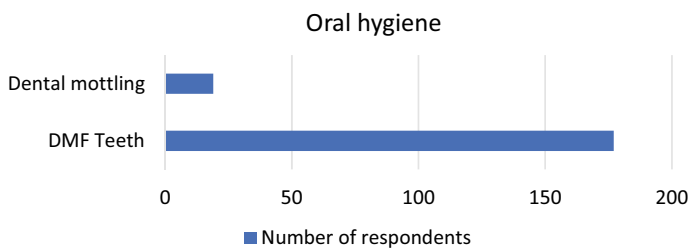


Fig. 16.3 Oral hygiene among the tribes

16.4.5 Factors Influencing the Anthropometrics of the Respondents

The various socio-demographic and economic conditions have an impact on the BMI and thereby the nutritional status of the population. The demographic factor of age shows an association with the BMI of the respondent, while gender has no influence on BMI of the respondent. We find the age group 41–45 shows more normal weight. Low BMI is prevalent among respondents aged above 55. More details are depicted in Table 16.4. The data in Table 16.5 shows that there is a significant association between the factor's education, occupation and income on the BMI of the respondents. The type of house also influences the BMI of the respondents. Normal weight was observed more in respondents living in pucca houses. The type of toilet used, however, does not have any association with the BMI status of the respondent.

The lifestyle patterns followed by the respondents such as consumption of alcohol do not have any association with the BMI status of the respondent, while tobacco usage influences the BMI of the respondent tribes (Table 16.6).

Table 16.4 Socio-demographic factors and BMI

Particulars	Categories	Underweight	Normal weight	Pre-obesity	Total
Age <i>p-value</i> = 0.002	15–20	18	14	0	32
	21–25	16	24	3	43
	26–30	12	7	3	22
	31–35	6	10	0	16
	36–40	14	17	8	39
	41–45	9	24	3	36
	46–50	5	17	1	23
	51–55	3	6	0	9
	Above 55	13	5	0	18
Total		96	124	18	238
Gender <i>p-value</i> = 0.323	Male	42	65	7	114
	Female	54	59	11	124
Total		96	124	18	238
Education <i>p-value</i> = 0.035	Illiterate	35	46	5	86
	Read and write	5	20	3	28
	Primary education	32	42	10	84
	Secondary education	16	10	0	26
	Senior secondary education	8	6	0	14
Total		96	124	18	238

Table 16.5 Economic factors and BMI

Particulars	Categories	Underweight	Normal weight	Pre-obesity	Total
Occupation <i>p-value = 0.001</i>	Collection of forest resources	17	24	5	46
	Agriculture	5	2	0	7
	Wage laborers	48	72	6	126
	Govt/semi govt job	4	8	0	12
	Unemployed	12	5	7	24
	Student	10	13	0	23
Total		96	124	18	238
Income per annum <i>p-value = 0.001</i>	No income	12	4	5	21
	Up to Rs. 25,000	24	20	6	50
	Rs. 25,001–Rs. 50,000	40	51	5	96
	Rs. 50,000–Rs. 100,000	7	29	2	38
	Rs. 100,000–Rs. 200,000	3	7	0	10
	Not applicable	10	13	0	23
Total		96	124	18	238
Type of house <i>p-value = 0.004</i>	Kutcha	2	10	0	12
	Pucca	59	92	10	161
	Semi pucca	35	22	8	65
Total		96	124	18	238
Type of toilet used <i>p-value = 0.176</i>	Pit toilet	11	25	4	40
	Flush toilet	70	83	9	162
	Open defecation	15	16	5	36
Total		96	124	18	238

Table 16.6 Lifestyle factors influencing the BMI of the tribes

Particulars	Categories	Underweight	Normal weight	Pre-obesity	Total
Consumption of alcohol <i>p-value = 0.791</i>	Yes	26	37	6	69
	No	63	80	10	153
Total		89	117	16	222
Smoking/chewing tobacco <i>p-value = 0.036</i>	Yes	79	90	10	179
	No	17	33	8	58
Total		96	123	18	237

16.4.6 Health Seeking Behavior

The tribals have their own indigenous medicinal system for diagnosis and treatment. Yet with time, it is observed that they are trying to adjust and utilize the modern medicinal system. Majority of the population visits government health centers, while a minority of 2.6% never visits any of the health centers. 45.8% of the population frequently avail the health services, but 52.1% rarely use the health service provisions. This is mainly because they use their traditional indigenous medicinal system for treatment mostly and their poor economic status. Among the population utilizing the services, 93.1% finds the service provisions affordable and satisfactory.

Medical insurance coverage is availed by 52.5% of the population of which majority are government medical insurances. Most of them are covered under the PM-JAY scheme by the Central Government of India. 47.3% of the population do not have any insurance coverage or have insurance outdated. The major barriers faced by them for achieving better status are illiteracy and non-affordability of the services. Some of the other reasons stated were lack of hospitals close by and some other personal reasons.

The overall development of the community is required for better nutrition and health status. The suggestions from the Kattunayakan tribes themselves have been noted as more government focus and funding (98.3%), providing more jobs (95.8%) and improving their educational status (81.9%) are the main suggestions.

16.5 Discussion

This study was conducted among the Kattunayakan tribes in Wayanad district of Kerala, where a total of 238 people of age group 15–59 were selected as participants. One of the major objectives of our study was to assess the nutritional status of the community. In general, tribal populations in the country report poorer health status and indicators compared to the general population (Basu 2000).

Kerala, as a state with better Human Development Index, has a dual burden of overnutrition and undernutrition prevailing known as the nutritional transition phase. In Kerala, 50% of adults in scheduled tribes are undernourished with low BMI. In our study, 52.1% report normal weight as per their age and height. 7.6% of the participants belonged to the pre-obesity category. This can be due to unhealthy lifestyle and occupational lifestyle factors. The Kattunayakan tribes we studied show fairly good knowledge and practices about nutrition and food consumption. This contrasts the reports that among tribal farm women in general, cooking methods are inappropriate and unhygienic (Dave et al. 2019). The data from Maharashtra tribal population reveals that affordability and accessibility are still the major reason for their low nutrition consumption (Rokade et al. 2020). Our study also confirms the same barrier among Kattunayakan tribes for achieving better nutritional status. The BMI status of tribal women of different age groups revealed that the young adult population has

better nutrition status in comparison with the older population (Nayak and Sreegiri 2016). Our study findings also corroborate with this observation.

Gender gap among BMI values is very commonly observed among tribal communities of India (Mahajan et al. 2019). Prevalence of undernutrition was profoundly higher in women revealing the discrimination still existing in the society. But an exception of males having higher undernutrition was found in the Kukna tribes of Gujarat broadcasting a cross-cultural variation in Indian tribes (Dey and Bisai 2019). Contrasting to these studies, our studies showed no association between gender and BMI status of the tribes. This agrees with some previous studies showing the status of tribes in Kerala having better health and development status compared to other Indian tribes (Devan 2006; Haddad et al. 2012).

The BMI status can be influenced by various social, economic, occupational, educational and lifestyle factors. Our study also seeks to provide insight into specific socio-economic, housing and lifestyle factors that have shown association with anthropometric measures. Occupation and income show significant association with BMI classification in the tribes with p -value 0.001. Lower economic level is always attributed with lower health status. Education is also shown having association with nutritional status but not as significant as occupation or income. Type of house they live in and the habit of tobacco chewing is also observed having association with the nutritional state of participants. These results help us understand the lifestyle, nutritional and health status of the population. As explained by the previous studies (Jancy 2007; Nagda 2001), we find that even improving the health status of the tribal population requires an overall improvement in their economic arena and other development indicators. We have found a significant association between education and occupation on nutritional status and hence improving these two indicators will help improve nutritional status. There is also a need for serious interventions to be taken to reduce tobacco consumption as they give tobacco since childhood considering it their tradition and culture.

16.6 Conclusion

Health of any individual or group is directly related to the nutritional status and access to health services. Tribal lives in close association with nature and is primarily dependent on them to meet the nutritional requirements. The Kattunayakan community has always been deprived of creche and basic facilities, which has forced them to remain underdeveloped in most aspects of life. The findings of this study have shown a steady social and nutritional transition among the tribes. The determinants that affect the nutrition status most are education, occupation, income, housing conditions and lifestyle. Education, occupation and employment are always interrelated, which in this community is comparatively low. The socio-economic upliftment of the community is occurring in the community, and the results are positive in nutritional and health aspects.

The lifestyle pattern of chewing tobacco citing them as a part of their tradition and culture needs to be curbed to further improve their health status.

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