



Prevalence and Determinants of Lifestyle Disorders among Elderly Tribal Women in the Attappadi Region of Kerala

Megha S. Karthikeyan^{1*}, Anitha Chandran C.², Beela G K.³ and Suma Divakar³

¹Ph.D. Scholar, Department of Community Science, College of Agriculture, Vellayani (Kerala), India.

²Assistant Professor, Department of Community Science, College of Agriculture, Vellayani (Kerala), India.

³Professor and Head, Department of Community Science, College of Agriculture, Vellayani (Kerala), India.

³Professor, Department of Community Science, College of Agriculture, Vellayani (Kerala), India.

(Corresponding author: Megha S. Karthikeyan*)

(Received: 28 January 2025; Revised: 06 March 2025; Accepted: 22 March 2025; Published online: 11 April 2025)

(Published by Research Trend)

DOI: <https://doi.org/10.65041/BiologicalForum.2025.17.4.9>

ABSTRACT: The world is in the stage of epidemiological transition, and noncommunicable diseases (NCD) are overtaking communicable diseases not only in general but also among the tribal population. Within the Indian context, tribal populations, restricted to rural areas, are assumed to be untouched by NCDs which are lifestyle-driven diseases. However, recent studies have produced evidence for the increasing trend of NCDs among tribal populations. Therefore, a cross-sectional study was conducted to find out the prevalence of diabetes, hypertension and cholesterol among the tribal elderly women. This study utilizes methods including group discussions, interviews, field observations and informal meetings. The experiences of the participants were collected through in-depth interviews, analyzed thematically to identify common patterns and interpreted to understand their healthcare-seeking behaviours within their cultural context. Elderly tribal women in Agali, Sholayur, and Pudur had a prevalence of diabetes (17.5%), hypertension (53.64%), and high cholesterol (9.16%), with increasing age linked to higher rates of diabetes and hypertension. The study highlights a significant burden of non-communicable diseases, due to inadequate nutrient intake and inappropriate healthcare practices.

Keywords: Tribal, Elderly woman, Lifestyle disorder, Risk factors, Surveillance.

INTRODUCTION

Tribals are characterized by a distinctive culture, primitive traits, and socio-economic backwardness. They are a group of people who live in isolation in natural, unpolluted surroundings far away from civilization with their traditional values, customs and beliefs. India has the second-largest concentration of tribal population and constitutes 8.3% of the nation's population (Krishna, 2011). Health is a prerequisite for human development and is an essential component for the well-being of mankind. The health problems of any community are influenced by the interaction of various socioeconomic and political factors (Hathur *et al.*, 2013). Within the Indian context, tribal populations, restricted to rural areas, are associated with poverty, illiteracy, and malnutrition (Kshatriya, 2014), thus, they are assumed to be untouched by lifestyle-driven diseases.

However, recent studies have produced evidence for an increasing trend of non-communicable disease (NCD) among the tribal population (Rizwan *et al.*, 2014). NCDs are going to be a global burden by 2030. In 2016, nearly 70% (40.5 million) of the 56.9 million deaths worldwide were due to NCDs. Fifty percent of all deaths and 62% of the total disease burden can be

Karthikeyan *et al.*,

Biological Forum

attributed to NCDs in India and their contribution to the burden of disease is projected to increase further during the next 25 years (Bhagyalaxmi *et al.*, 2013; Mathur *et al.*, 2021). Kshatriya and Acharya (2016) opined that as the health issues of tribal infants and children are increasingly being recognized, few concrete efforts have been made to understand the problems of the elderly population with special reference to emerging public health problems of degenerative diseases, such as diabetes, obesity, and cardiovascular diseases. Currently, the health profile of Indian tribes is potentially undergoing a similar transition. Lifestyle diseases are ailments that are primarily based on the day-to-day habits of people. Modifiable behavioural risk factors are tobacco use, physical inactivity, unhealthy diet, stress and use of alcohol. The prolonged presence of the above risk factor further led to metabolic disorders like raised blood pressure, obesity, hyperglycemia and hyperlipidemia.

In most countries, people who have a low socioeconomic status and those who live in poor or marginalized communities have a higher risk of dying from NCDs. Smoking rates, blood pressure, and several other NCD risk factors are often higher in groups with low socioeconomic status (Di Cesare *et al.*, 2013). The

tribal population in India too have high rates of hypertension (HTN) and other risk factors of NCDs. Use of tobacco, alcohol and unhealthy dietary habits have been reported to be high among men and women in the tribal populations. Ageing is mainly associated with social isolation, poverty, apparent reduction in family support, inadequate housing, impairment of cognitive functioning, mental illness, widowhood, loss, bereavement, limited options for living arrangements and dependency towards the end of life (Shah *et al.*, 2016). A major focus of studies related to health among tribes in India has been on malnutrition, but very few studies have been done on NCD in tribes of Kerala. The objective of this paper was to estimate the prevalence and risk factors of NCD among the elderly tribal women of the Attapady region of Kerala.

METHODOLOGY

The survey was conducted from March 2023 to December 2023. For the present study, a sample of 360 tribal elderly women aged 60-80 years was randomly selected from three panchayaths *i.e.*, Agali, Sholayur, and Pudur. The respondents were chosen using a Stratified Multistage Random Sampling Technique. The selection process includes three panchayaths within the Attapadi Tribal Development Block in the first stage, four wards from each panchayath in the second stage, and thirty respondents from each ward in the third stage. Additionally, in the fourth stage, ten elderly tribal women who are beneficiaries of both ICDS projects and the community kitchen were selected from the vicinity, bringing the total sample size to 360 elderly tribal women. Participants willing to participate in the study were included, whereas persons with severe chronic illness, physical disability, and mental disability were excluded from the study. The plan of the study was undertaken in two stages. In the first stage investigations were done on the macro samples of 360 elderly tribal women and in the second stage micro samples of 90 elderly tribal women were selected based on their lower nutritional status. A detailed interview of each person in the household was conducted using a pretested validated questionnaire which included personal information, demographic details, age, smoking, alcohol consumption, diet, educational status, economic status, family history of any disease, and usage of health-care facility.

Statistical analysis: The collected data were analysed using descriptive statistics. Frequencies and percentages were computed to describe the lifestyle disease profile rates. Percentage analysis was used to assess the responses. Data were analysed using Microsoft Excel 2019. The results were presented in tables and interpreted based on the distribution of responses.

RESULTS AND DISCUSSION

The present study aimed to study the prevalence of hypertension, diabetes and cholesterol among the tribal elderly women of Attapadi, Kerala. A total of 360 tribal participants were interviewed during the study Table 1. The prevalence of hypertension was found to be 53.61% across all three panchayats. The highest

percentage of hypertension cases is found in Sholayur (56.66%), followed by Pudur (54.10%), and Agali (50%). The prevalence of hypertension among the Nicobarese tribe was found to be 50.5%, which is similar to our study (Manimunda *et al.*, 2011). In another study conducted by Laxmaiah *et al.* (2015) 26260 tribal women participated from the state of Odisha, Kerala and Gujarat. The prevalence of hypertension was 26.4 per cent among women. It was higher in the states of Odisha (50-54.4%) and Kerala (36.7-45%). The risk of hypertension was 6-8 times higher in elderly people.

A cross-sectional study conducted by Sathiyarayanan *et al.* (2019), among the tribal population of Jawadhu Hills, Vellore district, Tamil Nadu found that the prevalence of diabetes and hypertension was 3.6% and 16.7%, respectively. The high prevalence of hypertension in these Panchayats suggests that lifestyle factors such as high salt intake, lack of physical activity, or genetic predispositions may be contributing to the problem. Misra *et al.* (2014) studied the risk factor profile for non-communicable diseases among *Mishing* tribes in Assam, India. A total of 332 individuals from the *Mishing* tribe were studied and 26 % of the population suffered from hypertension. Habib and Thankappan (2023), found prevalence of hypertension was 35.5% which is much higher than the 28.5% reported in the National Monitoring Survey (NNMS). Further authors reported that the inclusion of older adults in the sample could be one of the reasons for the higher prevalence of NCDs.

The prevalence of diabetes in Sholayur (23.33%) is the highest among the three panchayats, while Pudur has the lowest (12.50%). The total prevalence of diabetes across all three areas (17.5%) indicates that a significant portion of the population is affected by this chronic condition. Santhosam and Samuel (2013), conducted a study on the health problems of the 30 elderly females in the age groups of 60-80 in the Irular tribal women of the Kancheepuram district of Tamilnadu. And found that all the respondents had hypertension (22%), arthritis (17%), and diabetes (10%). It is seen that most of the respondents had more than one health problem. Kshatriya and Acharya (2016) conducted a cross-sectional study of 1090 women constituting a total of 9 major tribal groups to estimate the prevalence of the triple burden (undernutrition, overweight or obesity, and hypertension). A high prevalence of undernutrition and hypertension was observed among the Koras (51.9% and 10.6%, respectively), Bathudis (51.3% and 12.1%, respectively), and Oraons (49.6% and 16.5%, respectively). Negi *et al.* (2016), conducted an epidemiological study of non-communicable disease risk factors in a tribal district of Kinnaur, HP and found that hypertension was prevalent in 19.7% and diabetes in 6.9% of the population. Overweight and obesity were observed in 38.2% and 8.8% of the population respectively.

Upadhyay *et al.* (2013) conducted a systematic review of studies on diabetes in the tribal population in India from 2000 to 2011 and found that the prevalence of

diabetes was 5.9%. However, Beula (2012) in their study in tribal areas of Kanyakumari found 1.6% of females had diabetes. Moreover, a study by Sachdev (2012) among the tribal population showed that the prevalence of diabetes was 9.8% and 12.5%, respectively, with higher prevalence among the female population when compared with the male population. Shriram *et al.* (2021) conducted a cross-sectional study of 370 tribal women of 40 years above located in a hilly area in Vellore district, Tamil Nadu. Their study found that the prevalence of diabetes among the tribal population was 7.4% and 62% were newly diagnosed. Hypertension was present in 36.5% of the population. It is seen that the prevalence of diabetes and hypertension is higher among those aged above 60 years females, uneducated, who are not working physically inactive and overweight especially having abdominal obesity.

Kshatriya and Acharya (2016), studies involved nine tribes of India and found prevalence of hypertension among tribes was 11.7% ranging between a minimum of 6.2% and the maximum of 16.5%. In addition, increasing trends of overweight and obesity were observed and 12.8% of the total participants were obese. The prevalence of high cholesterol is relatively low in Pudur (4.16%) compared to Agali and Sholayur (10%), but overall, the condition is still a significant health concern across the three panchayats, with an overall prevalence of 9.16%. The percentage of individuals who are unaware of their health status is a significant public health concern. With 23.61% of the total population across the three panchayats being unaware. Agali has the highest percentage of individuals (25.83%) reporting the absence of lifestyle diseases, followed by Pudur (19.16%) and Sholayur (11.66%).

Being unaware of one's health status is a major concern because individuals who do not know they have a health condition such as hypertension, diabetes, or high cholesterol are less likely to seek treatment or adopt lifestyle changes. This can result in undiagnosed conditions that worsen over time, leading to complications. The total prevalence of individuals without lifestyle diseases is 22.77%, which indicates that nearly one in four individuals in these Panchayats do not suffer from common lifestyle diseases.

Deo *et al.* (2018) studied NCDs and associated risk factors in scheduled tribes in Coastal and Western Maharashtra. The prevalence of obesity, HTN, diabetes, and hypercholesterolemia was 0.9%, 11.7%, 6.7%, and 0.6% respectively. Age and obesity appeared to be the most dominant risk factors for hypertension. Kaur *et al.* (2022) conducted a community-based survey in 12 districts of India and found NCDs accounted for 66 per cent of the deaths of Tribe. The findings of this community-based survey suggested that NCDs were the leading cause of death among the tribal populations. The authors further suggested that control of NCDs should be one of the public health priorities for tribal districts in India.

Graphic representation of lifestyle diseases of the respondents

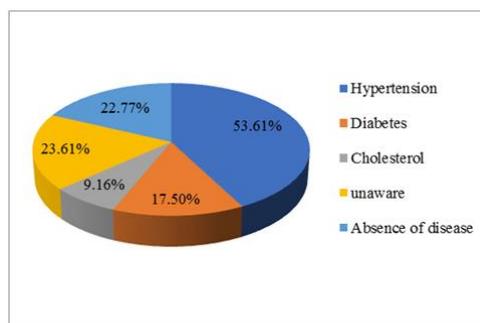


Table 1: Lifestyle disease profile of the respondents (N=360).

Lifestyle diseases	Agali	Pudur	Sholayur	Total
Hypertension	60 (50.0)	65(54.10)	68(56.66)	193 (53.61)
Diabetes	20 (16.66)	15 (12.50)	28 (23.33)	63 (17.5)
Cholesterol	12 (10.00)	5 (4.16)	16 (10.00)	33(9.16)
unaware	29 (24.16)	32 (26.66)	24 (20.00)	85(23.61)
Absence of disease	31 (25.83)	23 (19.16)	28 (11.66)	82 (22.77)

(Figures in parenthesis indicate percentage)

CONCLUSIONS

Non-communicable diseases burden in tribal population is in an increasing trend. Elderly tribal women in Agali, Sholayur, and Pudur had a prevalence of diabetes (17.5%), hypertension (53.64%), and high cholesterol (9.16%), with increasing age linked to higher rates of diabetes and hypertension. The study highlights a significant burden of non-communicable diseases, due to inadequate nutrient intake. The link between inadequate diets and the higher rates of NCDs is undeniable, highlighting the urgent need for nutritional education. The major limitation of this study was that age-specific diseases could not be ascertained as the elderly tribal women were not able to tell their exact age.

FUTURE SCOPE

There is a clear need for health education and awareness campaigns to address this issue. Empowering the tribal population with knowledge about proper nutrition, encouraging healthy eating habits, and providing better access to healthcare are all crucial steps in reversing the trend of rising NCDs.

Acknowledgement. The researcher acknowledges the infrastructural and financial support of Kerala Agricultural University, Kerala, India. The authors would like to thank the Integrated Tribal Development Project (ITDP) medical officer and medico-social workers who immensely helped during the data collection.

Conflict of Interest. None.

REFERENCES

- Beula, M. A. (2012). Epidemiological studies on type-2 diabetes mellitus in Kaani tribes of Kanyakumari district, Tamil Nadu, India. *Int J Res Rev Pharm Appl Sci.*, 2, 651-661.
- Bhagyalaxmi, A., Atul, T. and Shikha, J. (2013). Prevalence of risk factors of non-communicable diseases in a District of Gujarat, India. *Journal of health, population, and nutrition*, 31(1), 78.
- Deo, M. G., Pawar, P. V., Kanetkar, S. R. and Kakade, S. V. (2018). Multicentric study on prevalence and risk factors for hypertension and diabetes in tribal communities in Western and Northern Maharashtra. *Journal of Postgraduate Medicine*, 64(1), 23-34.
- Di Cesare, M., Khang, Y. H., Asaria, P., Blakely, T., Cowan, M. J., Farzadfar, F. and Ezzati, M. (2013). Inequalities in non-communicable diseases and effective responses. *The Lancet*, 381(9866), 585-597.
- Habeeb, S. and Thankappan, K. R. (2023). Metabolic non-communicable diseases in India: time to act. *The Lancet Diabetes & Endocrinology*, 11(12), 897-898.
- Hathur, B., Basavegowda, M. and Ashok, N. (2013). Hypertension: An emerging threat among tribal population of Mysore; Jenu Kuruba tribe diabetes and hypertension study. *International Journal of Health & Allied Sciences*, 2(4), 270-270.
- Kaur, P., Borah, P. K., Uike, P. V., Mohapatra, P. K., Das, N. K., Gaigaware, P. and Mehendale, S. M. (2022). Non-communicable diseases as a major contributor to deaths in 12 tribal districts in India. *Indian Journal of Medical Research*, 156(2), 250-259.
- Krishna, V. (2010). Indigenous communities and climate change policy: an inclusive approach. In *The Economic, Social and Political Elements of Climate Change* (pp. 27-49). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Kshatriya, G. K. (2014). Changing perspectives of tribal health in the context of increasing lifestyle diseases in India. *J Environ Soc Sci*, 1(1), 101.
- Kshatriya, G. K. and Acharya, S. K. (2016). Triple burden of obesity, undernutrition, and cardiovascular disease risk among Indian tribes. *PloS one*, 11(1), e0147934.
- Laxmaiah, A., Meshram, I. I., Arlappa, N., Balakrishna, N., Rao, K. M., Reddy, C. G. and Brahmam, G. N. V. (2015). Socio-economic & demographic determinants of hypertension & knowledge, practices & risk behaviour of tribals in India. *Indian Journal of Medical Research*, 141(5), 697-708.
- Manimunda, S. P., Sugunan, A. P., Benegal, V., Balakrishna, N., Rao, M. V. and Pesala, K. S. (2011). Association of hypertension with risk factors & hypertension-related behaviour among the aboriginal Nicobarese tribe living in Car Nicobar Island, India. *Indian Journal of Medical Research*, 133(3), 287-293.
- Mathur, P., Kulothungan, V., Leburu, S., Krishnan, A., Chaturvedi, H. K., Salve, H. R. and Garg, S. (2021). National noncommunicable disease monitoring survey (NNMS) in India: Estimating risk factor prevalence in adult population. *PloS one*, 16(3), e0246712.
- Misra, P. J., Mini, G. K. and Thankappan, K. R. (2014). Risk factor profile for non-communicable diseases among Mishing tribes in Assam, India: Results from a WHO STEPs survey. *Indian Journal of Medical Research*, 140(3), 370-378.
- Negi, P. C., Chauhan, R., Rana, V. and Lal, K. (2016). Epidemiological study of non-communicable diseases (NCD) risk factors in tribal district of Kinnaur, H.P. A cross-sectional study. *Indian Heart Journal*, 68(5), 655-662.
- Rizwan, S. A., Kumar, R., Singh, A. K., Kusuma, Y. S., Yadav, K. and Pandav, C. S. (2014). Prevalence of hypertension in Indian tribes: a systematic review and meta-analysis of observational studies. *PLoS one*, 9(5), e95896.
- Sachdev, B. (2012). Screening of type 2 diabetes mellitus and its associated risk factors among select tribes of Rajasthan. *Int J Health Sci Res*, 2(1), 33-44.
- Santhosam, M. A. and Samuel, U. (2013). A study on the health status of elderly Irular tribal women in Kancheepuram District. *IOSR Journal of Humanities and Social Science*, 7(2), 1-4.
- Sathiyarayanan, S., Muthunayanan, L., & Devaparthasarathy, T. A. (2019). Changing perspectives in tribal health: Rising prevalence of lifestyle diseases among tribal population in India. *Indian Journal of Community Medicine*, 44(4), 342-346.
- Shah Suhail, M., Majid, G. A., Rafiq, M., Fazili, A., Shah, R. J., Sameena, D. and Wani, A. Sociodemographic Profile and Health Status Perception of Elderly People in Hajin Block of Kashmir Valley: A Cross-Sectional Study.
- Shriraam, V., Mahadevan, S. and Arumugam, P. (2021). Prevalence and risk factors of diabetes, hypertension and other non-communicable diseases in a tribal population in South India. *Indian Journal of Endocrinology and Metabolism*, 25(4), 313-319.
- Upadhyay, R. P., Misra, P., Chellaiyan, V. G., Das, T. K., Adhikary, M., Chinnakali, P. and Sinha, S. (2013). Burden of diabetes mellitus and prediabetes in tribal population of India: a systematic review. *Diabetes research and clinical practice*, 102(1), 1-7.

How to cite this article: Megha S. Karthikeyan, Anitha Chandran C., Beela G K. and Suma Divakar (2025). Prevalence and Determinants of Lifestyle Disorders Among Elderly Tribal Women in the Attappadi Region of Kerala. *Biological Forum*, 17(4): 54-57.