

Tobacco Usage Pattern and Its Impact on Quality of Life (QOL) in Elderly Tribal Population in a Selected District of Western Odisha – A Mixed Method Study

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CITATION

Panda PS, Behera BK, Debata I, Mohanty P, Priyadarshini S. Tobacco Usage Pattern and Its Impact on Quality of Life (QOL) in Elderly Tribal Population in a Selected District of Western Odisha – A Mixed Method Study. Indian J Comm Health. 2026;38(1):162-167. <https://doi.org/10.47203/IJCH.2026.v38i01.032>

ARTICLE CYCLE

Received: 31/01/2026; Accepted: 16/02/2026; Published: 28/02/2026

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ABSTRACT

Introduction: Tobacco use is a major public health problem, particularly among aged individuals in indigenous peoples, where cultural characteristics and limited healthcare access promote its widespread use. In Odisha, tobacco consumption is highly prevalent among tribal communities and may adversely affect quality of life. **Aim & Objectives:** TO estimate the prevalence and patterns of tobacco use among aged individuals (≥60 years) in a tribal district of Odisha and to assess its impact on quality of life using the WHOQOL-BREF instrument. **Methods:** A community-based cross-sectional study was conducted from April to June 2025 in Kalahandi district. Using multistage sampling, 200 aged individuals were included. Two focus group discussions explored cultural characteristics influencing tobacco use. Data were analysed using descriptive statistics, chi-square test, independent t-test, and Pearson's correlation, with $p < 0.05$ considered significant. Thematic analysis was used for qualitative data. **Results:** Of 200 participants, 68% used smoking forms and 72% used smokeless tobacco. Tobacco users had significantly lower scores across all domains of quality of life ($p < 0.05$). Qualitative findings showed strong cultural acceptance, with perceived medicinal and social roles. **Conclusion:** Tobacco use is highly prevalent and negatively impacts quality of life. Culturally appropriate cessation strategies are needed.

KEYWORDS

Tobacco; Aged; Indigenous Peoples; Quality of Life; WHOQOL-BREF; Cultural Characteristics

INTRODUCTION

India, with a population of 1.46 billion, is home to approximately 104 million indigenous peoples, constituting 8.6% of the total population. Odisha accounts for nearly 18% of the country's tribal population, with a high concentration in its western districts.[1,2] These communities experience a disproportionate burden of tobacco use, influenced by cultural characteristics, socio-economic deprivation, and limited access to healthcare.[8] Among Particularly Vulnerable Tribal Groups, tobacco consumption is markedly high; studies have reported prevalence as high as 80% among middle-aged and older adults.[11,12] Similar trends have been observed across diverse tribal populations in India.[13,14] While the adverse physical health effects of tobacco are well documented, its impact on quality of life among aged individuals in indigenous populations remains underexplored. Tobacco use is associated with poorer physical, psychological, and social well-being.[6,7] Locally prevalent forms such as gudakhu, khaini, and paan are inexpensive and culturally accepted, often used as appetite suppressants during food scarcity.

This study aims to assess tobacco use patterns and their impact on quality of life among elderly tribal populations in Kalahandi, Odisha.

Aims & Objectives:

- Estimate the prevalence and patterns of tobacco use among elderly tribals (≥60 years) in Kalahandi district.
- Analyse the association between tobacco use and WHOQOL-BREF domain scores.
- Investigate sociocultural beliefs underlying tobacco use.

MATERIAL & METHODS

Study Type and Study Design: A community-based, mixed-method cross-sectional study was conducted to assess tobacco use and its impact on quality of life among elderly tribal populations.

Study Setting: The study was carried out in tribal-dominated villages of Kalahandi district, Odisha, an area with a high concentration of indigenous populations, including Particularly Vulnerable Tribal Groups (PVTGs).

Study Population: The study population comprised elderly tribal individuals aged ≥ 60 years residing in the selected villages. The study was conducted over a period of three months, from April to June 2025. The sample size was calculated based on a previously reported prevalence of tobacco use of 46%, with an absolute precision of 7% and a 95% confidence level. The minimum required sample size was estimated to be 200 participants.

Sampling Technique : A multistage sampling method was employed. Out of 13 blocks in Kalahandi district, four were selected randomly. From each block, one village was chosen with the assistance of local stakeholders including ASHAs, Anganwadi workers, and tribal leaders. Eligible participants were enrolled consecutively until the required sample size was achieved.

Inclusion Criteria:

- Elderly tribal individuals aged ≥ 60 years
- Permanent residents of selected villages
- Those who provided informed written consent

Exclusion Criteria :

- Individuals with severe cognitive impairment
- Individuals unable to provide informed consent

Strategy for Data Collection: Quantitative data were collected using a pre-tested structured questionnaire capturing socio-demographic characteristics and tobacco use patterns (type, frequency, duration). Quality of life was assessed using the WHOQOL-BREF instrument covering four domains: physical, psychological, social, and environmental. Face-to-face interviews were conducted in the local language by trained community health workers. For illiterate participants, questions were explained verbally. For qualitative assessment, two focus group discussions (FGDs) were conducted using purposive sampling among Dongria Kondh and Kond tribes, with 8–10 participants in each group. FGDs explored cultural beliefs and practices related to tobacco use and were audio-recorded with consent.

Working Definitions :

Tobacco user: Any individual currently using smoking or smokeless tobacco in any form.

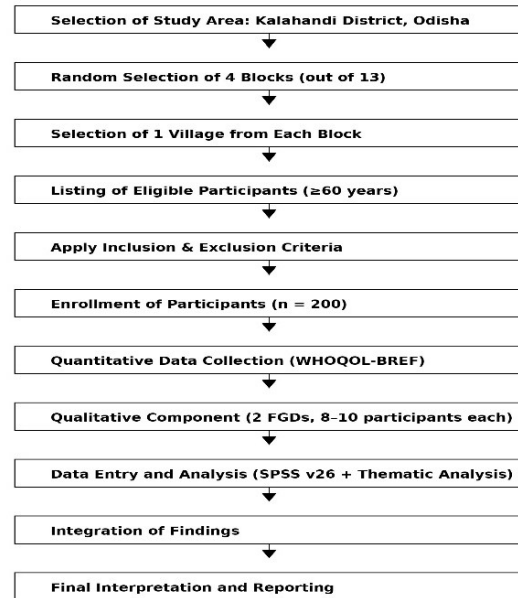
Elderly: Individuals aged ≥ 60 years.

Quality of Life (QOL): Individual perception of well-being assessed using WHOQOL-BREF across four domains.

Ethical Issues and Informed Consent: Ethical approval was obtained from the Institutional Ethics Committee of Kalinga Institute of Medical Sciences, Bhubaneswar (Approval No: KIIT/KIMS/IEC/2290/2025). Written informed consent was obtained from all participants. Confidentiality and anonymity were strictly maintained.

Data Analysis : Quantitative data were entered and analysed using IBM SPSS version 26. Descriptive statistics (mean, standard deviation, proportions) were used. Chi-square test and independent t-test assessed associations, while Pearson’s correlation examined relationships between tobacco use frequency and QOL scores ($p < 0.05$ considered significant).

Qualitative data were transcribed, translated into English, and analysed using thematic analysis with an inductive approach. Findings from both components were triangulated.



RESULTS

The mean age of study participants was 68 ± 11 years. Two-thirds were male (66.3%), and the majority were married (67.8%). Educational attainment was low, with nearly 68.3% being illiterate, and only 11.1% having secondary education or higher. In terms of occupation, one-third were currently not engaged in any work (33.7%), while 26.1% were labourers and 16.1% were farmers (Table 1). Overall, 73.4% of participants reported tobacco use. Smokeless forms were most common (65.3%), followed by smoking (26.6%). Nearly half of the respondents (46.7%) used smokeless tobacco exclusively, 8% smoked only, and 18.6% were dual users (Table 2). Table 3 showed tobacco users recorded significantly lower mean scores across all WHOQOL-BREF domains compared to non-users ($p < 0.05$). The greatest differences were observed in the physical and psychological domains, while social and environmental domains were also negatively affected. Pearson’s correlation further revealed a strong negative relationship between frequency of tobacco use and overall QOL ($r = -0.51$).

Table 4 showed among non-users, total QOL showed strong positive correlations with all domains, particularly environment ($r = 0.648, p < 0.01$) and social relationships ($r = 0.571, p < 0.01$). In contrast, among tobacco users, the correlations between domains and overall QOL were weaker, with the environment domain showing the lowest association ($r = 0.350, p < 0.01$). This indicates that tobacco use attenuates the strength of association between domain-specific well-being and overall quality of life.

Physical health scores were largely similar across groups. Females who smoked tobacco had lower scores (36.8 ± 10.6) compared to non-smokers (42.6 ± 7.5). Among tribes, Dongria Kond users of smokeless (36.3 ± 5.4) or any tobacco (36.3 ± 5.4) had markedly lower scores than non-users (43.1 ± 4.1) (Table-5).

Figure-1 showed the Physical health scores were significantly lower among females who smoked tobacco (median = 38) compared to the non-smokers ($p = 0.022$).

Figure-2 showed among tribal groups, Dongria Kond tobacco users showed reduced physical health (median =

36) compared to non-users (p = 0.009), while no significant difference was observed in Kuttia Kondh.

Table 1: Sociodemographic Profile of Study Participants (n=200)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	Mean ± SD	68 ± 11	-
Gender	Male	132	66.3%
	Female	67	33.7%
Marital Status	Married	135	67.8%
	Widowed/Separated	64	32.2%
Education Level	Illiterate	136	68.3%
	Primary	41	20.6%
	Secondary & Above	22	11.1%
Occupation (past/current)	None at present	67	33.7%
	Labourer	52	26.1%
	Farmer	32	16.1%

Table 2: Distribution of Tobacco Users in study population

Tobacco Use Type	Category	Frequency (n)	Percentage (%)
Smoking Tobacco	Yes	53	26.6%
	No	146	73.4%
Smokeless Tobacco	Yes	130	65.3%
	No	69	34.7%
Any Tobacco Use	None	53	26.6%
	Smokeless only	93	46.7%
	Smoking only	16	8.0%
	Both (dual users)	37	18.6%

Table 3: Comparison of WHOQOL-BREF Domain Scores Among Different Tobacco User Groups:

WHOQOL-BREF Domain	Overall	Non-Users (n=53)	Smokeless only (n=16)	Smokers only (n=93)	Both (n=37)
Physical Health	41.68 ± 8.52	42.64 ± 7.99	41.33 ± 8.55	42.00 ± 8.62	41.03 ± 9.32
Psychological	44.50 ± 5.87	43.91 ± 5.97	45.10 ± 6.10	43.56 ± 5.72	44.27 ± 5.23
Social Relationships	63.43 ± 9.07	63.34 ± 9.04	63.12 ± 8.96	65.31 ± 10.25	63.49 ± 9.14
Environment	41.00 ± 7.07	40.89 ± 8.03	41.63 ± 6.94	38.44 ± 6.94	40.68 ± 5.92

Table 4: Correlation Matrix of WHOQOL-BREF Domain Scores stratified by Tobacco Use

Tobacco Use	QOL Domain	Physical Health	Psychological Health	Social Relationships	Environmental Health	Total QOL
No	Physical Health	1	-0.114	0.007	0.080	0.472**
	Psychological Health	-0.114	1	0.046	0.332*	0.479**
	Social Relationships	0.007	0.046	1	0.040	0.571**
	Environmental Health	0.080	0.332*	0.040	1	0.648**
Yes	Physical Health	1	0.085	-0.013	-0.090	0.557**
	Psychological Health	0.085	1	0.049	0.035	0.495**
	Social Relationships	-0.013	0.049	1	-0.089	0.571**
	Environmental Health	-0.090	0.035	-0.089	1	0.350**

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Table 5: Comparison of Physical health score among socio-demographic variables stratified by Tobacco practice:

Variable	Category	Smoke tobacco		Smokeless tobacco		Any tobacco	
		Yes	No	Yes	No	Yes	No
Sex	Male	42.9 ± 7.9	41.4 ± 8.8	41.4 ± 8.7	42.8 ± 8.3	41.7 ± 8.6	42.2 ± 8.6
	Female	36.8 ± 10.6	42.6 ± 7.5	41.0 ± 9.0	42.0 ± 7.8	40.5 ± 9.0	43.4 ± 7.0

Variable	Category	Smoke tobacco		Smokeless tobacco		Any tobacco	
		Yes	No	Yes	No	Yes	No
Marital status	Married	41.8 ± 9.1	42.4 ± 7.9	41.9 ± 8.1	42.8 ± 8.5	41.8 ± 8.2	43.3 ± 8.4
	Widowed / Separated	40.0 ± 8.9	40.6 ± 9.1	40.2 ± 9.7	41.3 ± 6.7	40.3 ± 9.6	40.9 ± 6.7
Educational qualification	Illiterate	42.7 ± 8.2	41.7 ± 8.3	41.2 ± 8.7	43.4 ± 7.3	41.6 ± 8.6	42.9 ± 7.3
	Primary	39.6 ± 8.3	42.2 ± 8.9	41.8 ± 8.1	41.0 ± 10.1	41.3 ± 7.8	42.2 ± 11.3
	Secondary	36.7 ± 13.1	41.5 ± 7.8	40.5 ± 10.4	38.7 ± 8.5	39.6 ± 10.8	41.4 ± 5.8
Occupation	None at present	41.2 ± 9.5	42.6 ± 9.2	41.0 ± 10.0	44.0 ± 7.8	41.5 ± 9.6	43.9 ± 8.3
	Labourer	42.3 ± 7.8	42.2 ± 8.1	41.9 ± 8.1	43.1 ± 7.7	41.7 ± 8.0	43.8 ± 8.0
	Farmer	40.4 ± 8.7	41.2 ± 6.0	42.1 ± 6.4	39.3 ± 6.7	41.3 ± 7.0	40.4 ± 5.7
	Potter	42.4 ± 7.9	43.6 ± 8.9	42.4 ± 8.5	46.4 ± 8.0	43.4 ± 8.7	42.0 ± 6.9
Caste	Shopkeeper	39.7 ± 13.4	38.1 ± 8.6	37.2 ± 9.7	40.0 ± 10.0	36.8 ± 9.4	40.9 ± 10.0
	ST	42.0 ± 9.4	41.3 ± 8.3	41.3 ± 8.7	41.8 ± 8.3	41.4 ± 8.7	41.8 ± 8.3
	SC	39.2 ± 7.7	43.5 ± 8.5	41.0 ± 8.9	44.7 ± 7.0	41.2 ± 8.8	45.4 ± 6.5
Tribe	Kuntia Kond	41.6 ± 9.1	42.2 ± 8.6	41.8 ± 8.9	42.4 ± 8.4	41.8 ± 8.8	42.6 ± 8.5
	Dongoria Kond	34.5 ± 4.9	39.2 ± 6.0	36.3 ± 5.4	43.1 ± 4.1	36.3 ± 5.4	43.1 ± 4.1
Religion	Hindu	41.0 ± 9.7	42.5 ± 8.5	41.7 ± 9.1	42.8 ± 8.4	41.7 ± 9.0	43.3 ± 8.4
	Others	42.4 ± 6.5	39.7 ± 7.6	40.0 ± 7.6	41.3 ± 6.8	40.3 ± 7.7	40.6 ± 6.6

Table 6: shows the Qualitative Data analysis of 2 FGDs showing exploring the cultural perceptions and beliefs regarding tobacco use

Theme Number	Theme	Sub-theme / Key Quotes	Frequency / Representation
1	Perceived Health Impacts	Sub-theme: Respiratory issues (cough, breathlessness). Quotes: <i>"Smoking cigarettes gives me chest congestion"</i> Sub-theme: Oral problems (mouth sores, tooth loss). Quotes: <i>"Smoking causes cough but I can't sleep without doing it"</i> <i>"Bidi and cigarettes gives me oral ulcers because I can't drink more water or eat food"</i>	Mentioned by 5 participants
2	Impact on Daily Functioning & Activities	Sub-theme: Reduced mobility / stamina. Quotes: <i>"Chewing Gutka started at teenage and now I am not able to do farming so I sit home"</i> Sub-theme: Difficulty in chores. Quotes: <i>"Difficult for a clear bowel motion without GUTKA"</i> <i>"Chewing Gutka made me suffer from oral cancer since then I am living home and counting days to death"</i>	Mentioned by 3 participants
3	Reasons for Tobacco Use	Sub-theme: Habit & Addiction. Quotes: <i>"Addiction to tobacco is huge in our village"</i> Sub-theme: Coping with stress / boredom. Quotes: <i>"After meals I have to take it"</i> Sub-theme: Social / Cultural norms. Quotes: <i>"I can't sleep at night without taking"</i> <i>"Since young age I have been taking so now quitting isn't possible"</i>	Mentioned by 8 participants
4		Sub-theme: Awareness levels. Quotes: <i>"I know it's bad but anyways old age already brings us close to death"</i>	Mentioned by 7 participants

Theme Number	Theme	Sub-theme / Key Quotes	Frequency / Representation
5	Awareness and Attitudes towards Risks Barriers to Quitting (If applicable)	Sub-theme: Perception of risk severity. Quotes: <i>"We sell tobacco products locally so that we get money so that we can live"</i> <i>"At this age it's difficult to live since body is addicted"</i> Sub-theme: Difficulty dealing with withdrawal. Quotes: <i>"I tried stopping, but the craving was too strong"</i> Sub-theme: Lack of support / cessation services. Quotes: <i>"There's no support group to help us"</i> <i>"No support from ASHA / ANM to quit tobacco"</i>	Mentioned by 9 participants
6	Social Aspects of QoL	Sub-theme: Social support from family / community. Quotes: <i>"Almost all are addicted in our family because it's easily available"</i> Sub-theme: Stigma or acceptance related to tobacco use. Quotes: <i>"Women are judged more and thrashed by men if they deny them to consume tobacco"</i>	Mentioned by 5 participants

Figure 1: Box plot showing the association between daily tobacco smoking status and physical health score, stratified by sex.

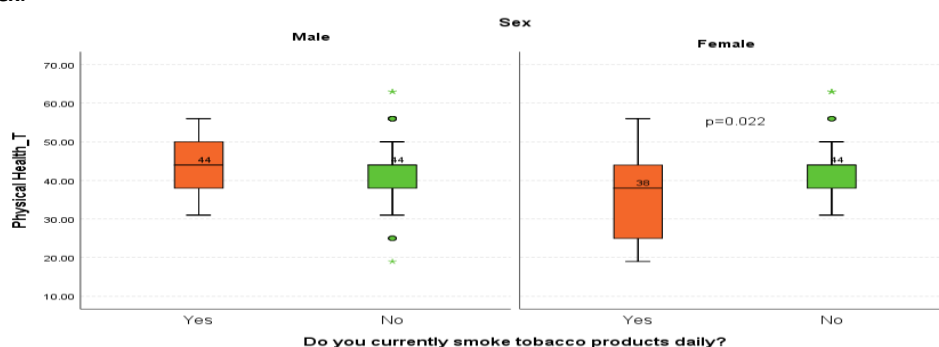
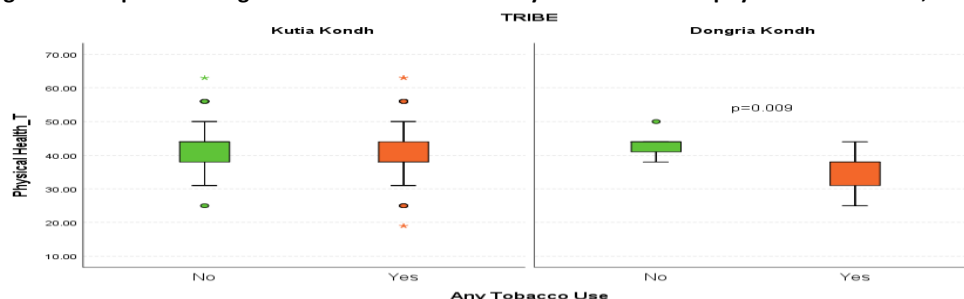


Figure 2: Box plot showing the association between any tobacco use and physical health score, stratified by tribe.



DISCUSSION:

The present study reveals a high prevalence of tobacco use among elderly individuals in indigenous communities of Kalahandi, Odisha, with a significant negative impact on quality of life (QOL). These findings are consistent with recent national evidence from the Longitudinal Ageing Study in India, which reports substantial tobacco use among tribal adults aged ≥45 years.[9] Similar high prevalence has been documented among Particularly Vulnerable Tribal Groups, often exceeding 60–70%.[11,12] Smokeless tobacco emerged as the predominant form, reflecting its cultural acceptability, affordability, and easy availability in tribal settings, as reported in recent literature.[13] The study further demonstrates that tobacco users had significantly poorer QOL across domains, particularly physical and psychological, which aligns with evidence linking tobacco use to chronic

morbidity, functional limitations, and psychological distress.[6] Qualitative findings highlight that tobacco use is deeply embedded within cultural characteristics, including perceived medicinal benefits, social acceptance, and intergenerational transmission. Similar patterns have been observed in indigenous populations, where traditional beliefs and low awareness of health risks sustain tobacco use.[14,15] Gender differences were also evident, with higher smokeless tobacco use among women and smoking among men, consistent with sociocultural norms reported in recent Indian studies.[16] Global evidence further supports the cultural entrenchment of tobacco use among indigenous populations and its associated health burden.[17] This study fulfils its objectives by demonstrating a high prevalence of tobacco use and establishing its significant association with reduced QOL among elderly indigenous

populations. Smokeless tobacco was the most common form, and cultural characteristics played a central role in sustaining its use. Overall, these findings underscore the urgent need for culturally sensitive, community-based tobacco cessation strategies integrated within existing tribal health services, with emphasis on behaviour change communication and gender-responsive interventions to improve quality of life.

RECOMMENDATION

The study underscores the need for culturally tailored tobacco control strategies in indigenous communities. Public health interventions should integrate socio-cultural factors, gender roles, and economic contexts influencing tobacco use. Strengthening the role of ASHAs and ANMs in delivering age-appropriate cessation counselling and incorporating routine quality-of-life assessments at the primary care level are essential. Active involvement of tribal leaders can enhance community acceptance and sustainability. A community-based, culturally sensitive, and health system-integrated approach is crucial to reduce tobacco use and improve quality of life among elderly tribal populations.

LIMITATION OF THE STUDY

The cross-sectional design limits causal inference. Tobacco use was self-reported and may be prone to recall and social desirability bias. The study was confined to selected villages of one district, limiting generalizability. Potential confounders such as comorbidities and nutritional status were not fully assessed.

RELEVANCE OF THE STUDY

This study contributes to the existing body of knowledge by providing context-specific evidence on tobacco use among elderly individuals in indigenous communities, a population that is often underrepresented in research. Unlike previous studies that primarily focus on prevalence, the present study establishes a clear association between tobacco use and multidimensional quality of life using the WHOQOL-BREF instrument. The inclusion of qualitative insights further enhances understanding by highlighting the role of cultural characteristics, social acceptance, and traditional beliefs in sustaining tobacco use. By focusing on Particularly Vulnerable Tribal Groups in Odisha, the study offers valuable inputs for designing culturally appropriate, community-based interventions and strengthening tribal health policies.

AUTHORS CONTRIBUTION

PSP: conceptualized the study, coordinated data collection, performed data analysis, and drafted the manuscript. BKB: provided overall supervision, methodological input, and critical revision of the manuscript. ID: contributed to interpretation of findings and provided critical intellectual inputs. PM: supported data collection, literature review, and manuscript preparation. All authors reviewed and approved the final version of the manuscript. SP: supported in Concept design and modification, Data collection, entry and analysis using appropriate statistical software.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil

CONFLICT OF INTEREST

There are no conflicts of interest.

ACKNOWLEDGEMENT

The authors sincerely thank the study participants, local tribal leaders for facilitating community access, and ASHAs and Anganwadi workers for their support in data collection. We also acknowledge the Department of Community Medicine, KIMS, Bhubaneswar, for institutional guidance.

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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