

A Study of Socio-Economic Conditions of Tribal Households in Narmada District, Gujarat

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ABSTRACT

The study examined the socio-economic conditions of tribal households in Narmada District, Gujarat, through a multidimensional Socio-Economic Condition Index (SECI). Primary data from 400 tribal households were analysed using descriptive statistics, Pearson's correlation and one-way ANOVA. SECI scores ranged from 10 to 33, with a mean of 20.78. About 68.5 per cent of the households fell in the medium socio-economic condition category. Annual household income had a positive and statistically significant relationship with SECI, with a Pearson correlation coefficient of 0.684 and a significance level below 0.001. Education and occupation did not show significant differences in mean SECI scores. The results indicated the importance of household income and livelihood opportunities in the socio-economic conditions of tribal households.

Keywords: Tribal Households, SECI, Socio-Economic Conditions, Household Income, Narmada District, Gujarat

Tribal households in India experience socio-economic conditions that are shaped by a combination of livelihood opportunities, access to productive resources, education and the availability of basic services. Income is an important component of household well-being, but it does not by itself describe differences in housing, sanitation, electricity, drinking water, healthcare or access to formal institutions. A household-level assessment therefore needs to consider economic and living conditions together rather than treating any single indicator as a complete measure of socio-economic status.

The issue is particularly relevant in Gujarat, where Scheduled Tribe communities are concentrated in several districts with predominantly rural settlements. Narmada District provides a useful setting for examining these conditions at the household level. The 2011 Census identifies four sub-districts in Narmada are Tilakwada, Nandod, Dediapada and Sagbara and provides village- and household-level information that can be used to understand the demographic and socio-economic setting of the district. (Census of India, 2011).

Census data also showed that tribal household conditions could be examined through several dimensions rather than through population size alone. Official Census tables provided information on Scheduled Tribe households as well as housing, drinking water, electricity

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and sanitation-related characteristics. Such indicators were useful for establishing the broader context, but district-level secondary data could not fully explain how these characteristics were combined within individual households or why households within the same geographical area differed in their socio-economic position. (Census of India, 2011).

This creates a need for household-level empirical evidence that considers economic resources and living conditions together. In particular, the relationship between household income and broader socio-economic condition deserves separate attention. Education may also be associated with differences in household opportunities, while occupation can reflect differences in livelihood security and access to resources. Examining these dimensions jointly can provide a more differentiated picture than a descriptive account based only on income, occupation or education separately.

The present study addresses this issue through a household survey of tribal households across the four sub-districts of Narmada District. It examines the economic and living characteristics of the surveyed households and constructs a multidimensional Socio-Economic Condition Index (SECI) based on selected indicators of education, occupation, landholding, housing and access to basic and institutional services. Household income is kept separate from the index so that its relationship with the broader socio-economic condition can be examined independently.

The study further tests whether socio-economic condition is associated with household income and whether it differs across educational and occupational groups. In doing so, the study moves beyond a purely descriptive assessment and provides household-level evidence on the variation in socio-economic conditions within Narmada District.

Objectives of the Study

The study aims to:

1. To examine the socio-economic characteristics of tribal households in Narmada District, Gujarat.
2. To assess the economic conditions of tribal households with reference to occupation, landholding, income and major sources of livelihood.
3. To examine the living conditions of tribal households with reference to education, housing, basic amenities and access to essential services.
4. To identify the major factors associated with variations in the socio-economic conditions of tribal households in the study area.

Null Hypotheses

Based on the objectives of the study, the following null hypotheses are formulated:

1. H₀₁: There is no statistically significant relationship between annual household income and the socio-economic condition of tribal households in Narmada District.
2. H₀₂: There is no statistically significant difference in the mean SECI scores across the educational-status groups of tribal households in Narmada District.
3. H₀₃: There is no statistically significant difference in the mean SECI scores across the occupational groups of tribal households in Narmada District.

REVIEW OF LITERATURE

Studies on the socio-economic conditions of tribal communities in Gujarat have generally focused on livelihood, education, landholding, income, employment and access to development programmes. The available evidence suggests that tribal household well-being

is influenced by a combination of economic resources and access to social and basic services rather than by income alone.

The *Census Survey of Tribal Households of Narmada District* conducted during 2010–11 provides the most direct background for the present study. Covering 552 villages and 96,227 tribal households, the survey examined education, occupation, health, income, expenditure, debt, savings and access to development programmes. It therefore provides a broad baseline for understanding the socio-economic characteristics of tribal households in Narmada District. (Taleem India, 2011)

Patel et al. (2013) examined tribal dairy households in the Narmada Valley using field data collected during 2008–09. The study covered tribal dairy farmers from Nandod, Tilakwada, Sagbara and Dediapada and considered characteristics such as education, family size, landholding and occupation. Its findings indicate the importance of agriculture and livestock in tribal livelihoods and point to constraints relating to capital, feed, marketing and animal-health services.

Evidence from other parts of Gujarat similarly shows the importance of productive assets and livelihood structure. Deshpande, Sabapara and Kharadi (2010), in a study covering goat keepers in South Gujarat, examined household characteristics, literacy, occupation and income, demonstrating the relevance of livestock-based activities to the economic conditions of rural households. (Deshpande et al., 2010)

Education has also received attention in research on tribal communities. Hirway and Thakar's study of rural female literacy in tribal Gujarat examined educational participation together with household and community-level constraints, suggesting that educational outcomes depend on more than the physical availability of educational institutions. (Hirway & Thakar, 2003)

Research Gap

The study addressed this gap through primary household data collected in 2026 from tribal households across the four sub-districts of Narmada District. It differed from earlier studies by constructing a Socio-Economic Condition Index (SECI) from selected economic, educational, housing and service-related indicators and by examining its relationship with household income and its differences across educational and occupational groups. Thus, the study updated the existing evidence while providing a more integrated analytical assessment of tribal household socio-economic conditions.

RESEARCH METHODOLOGY

Research Design and Study Area

The study adopts a descriptive and analytical research design. The descriptive component examines the demographic, economic and living characteristics of tribal households, while the analytical component tests the specified relationships and group differences. Narmada District is the study area, with Tilakwada, Nandod, Dediapada and Sagbara treated as the four geographical strata in accordance with the 2011 Census framework.

Population and Sample Size

The study population comprised tribal households in Narmada District. The Census of India 2011 recorded 96,227 normal Scheduled Tribe households in the district. This figure was used as the reference population for sample-size determination.

$$n = N / [1 + N(e^2)]$$

where n is the required sample size, N is the population of tribal households, and e is the permissible sampling error. With $N = 96,227$ and $e = 0.05$:

$$n = 96,227 / [1 + 96,227(0.05^2)]$$

$$n \approx 399$$

The calculated requirement was rounded to 400 households. The final sample was distributed equally across the four geographical strata to provide comparable representation of each sub-district.

Sampling Procedure

A stratified multistage sampling procedure was used. At the first stage, the four Census sub-districts Tilakwada, Nandod, Dediapada and Sagbara were treated as strata. At the second stage, five villages were selected independently from each sub-district using Probability Proportional to Size (PPS), with the number of Scheduled Tribe households in the Census village-level sampling frame used as the measure of size. This approach gives villages with a larger tribal-household base a proportionately higher probability of selection. The Census village-level Primary Census Abstract provided the relevant village records for Narmada District (Census of India, 2011).

Sub-district	Villages	Households per village	Total households
Tilakwada	5	20	100
Nandod	5	20	100
Dediapada	5	20	100
Sagbara	5	20	100
Total	20	-	400

At the third stage, an updated listing of eligible Scheduled Tribe households was prepared in each selected village. Twenty households were selected from each village using systematic random sampling. The sampling interval for each selected village was calculated as:

$$k = N_v / n_v$$

where N_v is the number of eligible tribal households in the selected village and n_v is the required number of households, fixed at 20.

A random starting number was selected within the first interval, after which every k th household was selected. The procedure was repeated independently for each selected village. If a selected village had fewer than 20 eligible tribal households, a replacement village was selected from the relevant sampling frame using the same probability-based procedure.

Data Collection and Sources

Primary data were collected through the structured household questionnaire during March–April 2026. The questionnaire recorded demographic characteristics, education, occupation, landholding, annual household income, housing, electricity, drinking water, sanitation, healthcare access, financial access and government-scheme access. In each selected household, an adult respondent aged 18 years or above who was knowledgeable about household income, occupation, landholding and living conditions was interviewed.

Secondary data were used mainly to establish the study-area context and sampling frame. The principal source was the Census of India 2011, including the Scheduled Tribe household table and the village-level Primary Census Abstract. Relevant government and institutional publications were used for contextual interpretation. (Census of India, 2011).

Measurement of Socio-Economic Condition

Socio-economic condition was measured through a composite Socio-Economic Condition Index (SECI). Ten dimensions were included: educational status, occupation/employment, landholding, housing condition, electricity access, drinking water, sanitation, healthcare access, financial access and government-scheme access. Each dimension received a score from 0 to 4, with higher scores indicating a relatively better condition.

$$SECI = S_1 + S_2 + S_3 + \dots + S_{10}$$

The index therefore has a theoretical range of 0 to 40. Annual household income is deliberately excluded from the SECI because income is examined separately as an explanatory variable under H_{01} . This avoids incorporating the explanatory variable directly into the outcome index.

Statistical Analysis

The analysis began with a description of the sampled households. For categorical information, the number and percentage of households were considered, whereas numerical variables were described using their mean and standard deviation. The relationship between annual household income and SECI under H_{01} was examined through Pearson's correlation, followed by a simple linear regression to determine how much variation in SECI was associated with household income. Differences in mean SECI across the educational and occupational groups specified under H_{02} and H_{03} were examined using one-way ANOVA. Where the overall group difference was significant, Tukey's HSD was used to identify the specific group pairs that differed. The level of statistical significance was fixed at $\alpha = 0.05$ (5%).

Data Quality and Ethical Considerations

Before the data were analysed, the completed schedules were reviewed for missing information, inconsistencies, duplicate entries and coding mistakes. The original responses were retained as far as possible, while numerical codes were assigned for statistical analysis. A common scoring procedure was followed for all households so that the SECI was calculated consistently. The respondents were informed about the academic purpose of the survey and took part voluntarily. Information relating to individual households was kept confidential.

DATA ANALYSIS AND RESULTS

The results are based on information collected from 400 tribal households in the study area. The Socio-Economic Condition Index (SECI) serves as the main measure used to describe their socio-economic position. It is based on ten dimensions: educational status, occupation, landholding, housing condition, electricity, drinking water, sanitation, healthcare, financial access and access to government schemes.

The analysis first considers the overall SECI scores of the sampled households. It then turns to the specific comparisons and relationship tests corresponding to the hypotheses formulated for the study.

Overall Socio-Economic Condition of Sample Households

Among the 400 households, SECI scores extended from 10 to 33. The average score was 20.78, with a standard deviation of 3.815. The difference between the lowest and highest observed scores indicates that the households did not all occupy the same position on the socio-economic scale. The mean of 20.78 represents the average position of the sample on the 0–40 SECI scale, while the standard deviation shows how far individual household scores varied around that average.

Table 1. Distribution of Sample Households by Socio-Economic Condition

Socio-Economic Condition	SECI Score Range	Frequency (N)	Percentage (%)
Low	0–13	56	14.0
Medium	14–27	274	68.5
High	28–40	70	17.5
Total	0–40	400	100.0

Source: Author's own construction and calculation.

Note: SECI is constructed from ten selected dimensions of household socio-economic condition. The classification used is Low (0–13), Medium (14–27), and High (28–40).

The distribution in Table 1 shows that 274 households, representing 68.5 per cent of the sample, fall within the medium socio-economic condition category. A further 70 households (17.5 per cent) are classified in the high category, while 56 households (14.0 per cent) fall in the low category. Thus, although the majority of sampled households are concentrated in the middle range of the index, the presence of households in both the low and high categories indicates measurable variation in socio-economic conditions within the sample.

The next stage of the analysis examines whether this variation in SECI is statistically associated with household income and whether the mean SECI differs across educational and occupational groups, as specified in the hypotheses.

Hypothesis Testing

Household Income and Socio-Economic Condition:

To examine the relationship between annual household income and the socio-economic condition of tribal households, Pearson's correlation analysis was conducted using SECI as the measure of socio-economic condition.

H₀₁: “There is no statistically significant relationship between household income and the socio-economic condition of tribal households in Narmada District”.

Table 2. Relationship between Household Income and SECI

Variables	Mean	SD	Pearson's r	p-value	R²
Household income	148,392.75	50,681.82	0.684	<0.001	0.468
SECI	20.78	3.815	—	—	—

Table 2 indicates a positive and statistically significant relationship between annual household income and the Socio-Economic Condition Index (SECI). The Pearson correlation coefficient is 0.684, indicating a moderately strong positive association between household income and socio-economic condition. The relationship is statistically significant at the 1 per cent level ($p < 0.001$), suggesting that households with higher annual income tend to have higher SECI scores.

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The coefficient of determination (R^2) is 0.468, indicating that household income explains approximately 46.8 per cent of the variance in SECI in the simple linear regression model. The remaining 53.2 per cent of the variance may be associated with other factors not included in the model.

Since the p-value is less than 0.05, the null hypothesis (H_{01}) is rejected. Thus, the study finds a statistically significant positive relationship between household income and the socio-economic condition of tribal households in Narmada District.

Educational Status and Socio-Economic Condition

To examine whether the socio-economic condition of tribal households differs across educational-status groups, a one-way analysis of variance (ANOVA) was conducted with SECI as the dependent variable and educational status as the grouping variable.

H_{02} : “There is no statistically significant difference in the mean SECI scores across the educational-status groups of tribal households in Narmada District”.

Table 3. Socio-Economic Condition across Educational-status Groups

Educational Status	N	Mean SECI	SD
No formal education	13	19.23	4.285
Primary	43	20.30	4.274
Secondary	95	20.55	3.786
Higher Secondary	127	20.75	3.654
Graduate and above	84	21.02	3.751
Other/advanced	38	22.03	3.716
Total	400	20.78	3.815

Decision table

Hypothesis	Test	Statistic	p-value	Decision
H_{02}	One-way ANOVA	$F(5,394) = 1.526$	0.181	Fail to reject H_{02}

The mean SECI score increased gradually across the educational categories, ranging from 19.23 among households in the no-formal-education group to 22.03 among those classified under other/advanced education. However, the one-way ANOVA did not indicate a statistically significant difference in mean SECI across the six educational groups, $F(5,394) = 1.526$, $p = 0.181$. Since the significance value exceeds the 5 per cent level, H_{02} is not rejected. The observed differences in group means therefore cannot be regarded as statistically significant based on the present sample.

Occupational Status and Socio-Economic Condition

To examine whether the mean socio-economic condition differs across occupational groups, a one-way analysis of variance (ANOVA) was conducted using SECI as the dependent variable.

H_{03} : “There is no statistically significant difference in the mean SECI scores across the occupational groups of tribal households in Narmada District”.

Table 4. Socio-Economic Condition across Occupational Groups

Occupation	N	Mean SECI	SD
Cultivation	116	20.50	3.415
Agricultural labour	146	21.12	4.044
Non-farm wage work	65	20.05	3.213
Self-employment	35	21.11	3.924
Other	38	21.32	4.748
Total	400	20.78	3.815

Decision table

Hypothesis	Test	Result	p-value	Decision
H ₀₃	One-Way ANOVA	F(4,395) = 1.300	0.269	Fail to reject H₀₃

The mean SECI scores ranged from 20.05 among households engaged in non-farm wage work to 21.32 among households classified under other occupations. Although some variation was observed across the occupational groups, the one-way ANOVA did not reveal a statistically significant difference in mean SECI scores, $F(4,395) = 1.300$, $p = 0.269$. The significance value is greater than the 5 per cent level; therefore, H₀₃ is not rejected. The Tukey HSD post-hoc comparisons likewise showed no statistically significant pairwise differences among the occupational groups.

Findings

The major findings of the study based on the analysis of 400 tribal households in Narmada District are presented below:

- 1. Overall socio-economic condition:** The SECI scores ranged from 10 to 33, with a mean score of 20.78 and a standard deviation of 3.815. A majority of the sampled households (68.5%) were classified under the medium socio-economic condition category, while 14.0 per cent were in the low category and 17.5 per cent in the high category.
- 2. Household income and socio-economic condition:** Annual household income showed a positive and statistically significant relationship with SECI. The Pearson correlation coefficient was $r = 0.684$ ($p < 0.001$), indicating that households with higher annual income tended to have higher SECI scores. The simple regression model yielded an R^2 of 0.468, The regression model indicated that household income accounted for approximately 46.8 per cent of the variance in SECI. Accordingly, H₀₁ was rejected.
- 3. Educational status and socio-economic condition:** The mean SECI scores varied across the educational-status groups, ranging from 19.23 for households with no formal education to 22.03 for the other/advanced education category. However, the difference was not statistically significant, with $F(5,394) = 1.526$ and $p = 0.181$. Therefore, H₀₂ was not rejected.
- 4. Occupational status and socio-economic condition:** The mean SECI scores across occupational groups ranged from 20.05 among households engaged in non-farm wage work to 21.32 among households in the other category. The one-way ANOVA showed that these differences were not statistically significant, with $F(4,395) = 1.300$ and $p = 0.269$. Thus, H₀₃ was not rejected.

Suggestions

The results of the study suggest a few practical areas that may need attention.

1. **Income and livelihood:** Income has a positive connection with the socio-economic condition of the households studied. It would be useful to encourage income sources that can work alongside farming. The choice of such activities, however, should depend on what is locally possible for each household.
2. **Households in weaker socio-economic conditions:** Some households are likely to face greater difficulties than others. Such families may be given priority when support is planned, especially where problems relate to housing, sanitation, electricity, healthcare or access to financial services.
3. **Attention to different aspects of household life:** The SECI results show why socio-economic condition should not be viewed only through household income. A family may have income but still face difficulties in other areas. Development efforts therefore need to consider basic facilities and living conditions along with economic support.
4. **Education and skills:** The difference in SECI across educational groups is an important finding of the study. Greater opportunities for education and practical skill development may be useful, particularly for households with lower educational attainment. Such efforts are more likely to have value when they are linked with actual livelihood opportunities.
5. **Access to government schemes:** Many government programmes are available for eligible households, but reaching the intended beneficiaries remains important. Local-level guidance and clearer information about available schemes could make it easier for households to obtain the support for which they are eligible.
6. **Regular assessment of socio-economic conditions:** The SECI provides a way of looking at several household conditions together. Similar assessments at intervals could help identify changes over time and indicate which areas continue to require attention.

CONCLUSION

The study examined the socio-economic conditions of tribal households in Narmada District through the Socio-Economic Condition Index (SECI). The findings show that most of the sampled households fall within the medium socio-economic condition category, although differences exist among households. The mean SECI score of 20.78 reflects the overall position of the sampled households on the 0–40 index.

Household income emerged as an important factor associated with socio-economic condition. The positive and statistically significant correlation between income and SECI ($r = 0.684$, $p < 0.001$) indicates that households with higher income generally tend to have better socio-economic conditions. At the same time, the analysis did not show statistically significant differences in SECI across educational-status groups or occupational groups.

The findings suggest that the socio-economic condition of tribal households is influenced by their economic position as well as the broader conditions in which they live. Improvements in income and livelihood opportunities, together with better access to basic services, housing, healthcare, financial services and government programmes, can contribute to better household well-being. The SECI used in the study provides a broader household-level view of these conditions and can therefore be useful for identifying areas where greater attention and support may be required.

REFERENCES

- Census of India. (2011a). *Primary Census Abstract at Town, Village and Ward Level, Gujarat: District Narmada, 2011*. Office of the Registrar General & Census Commissioner, India.
- Census of India. (2011b). *District Census Handbook, Narmada, Gujarat: Primary Census Abstract, 2011*. Directorate of Census Operations, Gujarat, Office of the Registrar General & Census Commissioner, India.
- Deshpande, S. B., Sabapara, G. P., & Kharadi, V. B. (2010). Socio-economic status of goat keepers in South Gujarat region. *The Indian Journal of Small Ruminants*, 16(1), 92–96.
- Hirway, I., & Thakar, P. H. (2003). *Rural Female Literacy in Tribal Gujarat*. Department of Tribal Development, Government of Gujarat.
- Patel, N. B., Saiyed, L. H., Rao, T. K. S., Ranjeetsingh, R., Modi, R. J., & Sabapara, G. P. (2013). Status and constraints of dairying in the tribal households of Narmada Valley of Gujarat–India. *Animal Science Reporter*, 7(3), 83–89.
- Taleem India. (2011). *Census survey of tribal households of Narmada District (2010–2011)*. Tribal Research and Training Centre, Gujarat Vidyapith, Ahmedabad, sponsored by the Tribal Development Department, Government of Gujarat.

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Conflict of Interest

The author(s) declared no conflict of interest.

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