



Estimation Of Sanitation Index For Malasari Tribes- An Empirical Study

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ARTICLE INFO ABSTRACT

This study delves into the sanitation index among the Malasari tribes, scrutinizing parameters such as drainage facilities, toilet availability, and composite sanitation index. Through structured interviews and meticulous data analysis, the research unearthed critical insights into the community's sanitation practices and challenges. The findings unveiled stark deficiencies in sanitation infrastructure, with a significant majority of households lacking proper drainage systems and separate toilet facilities. Specifically, 71% of respondents reported the absence of drainage facilities, while 76% indicated the lack of separate toilet facilities. Moreover, the composite sanitation index analysis showcased prevalent poor and average sanitation conditions among the surveyed households, with 45.52% categorized as having poor sanitation and 33.23% classified as average. These findings underscore the pressing need for targeted interventions to ameliorate sanitation access and bolster health outcomes within the Malasari tribal community. The study advocates for multifaceted approaches integrating infrastructure development, hygiene education, and community engagement initiatives to address sanitation challenges and enhance the overall well-being of the Malasari tribes.

Keywords: sanitation index, Malasari tribes, drainage facilities, toilet availability, composite index, sanitation infrastructure, health promotion.

Introduction

According to UNICEF and WHO (2019), the population that utilize safely managed sanitation services increased from 28% to 45% from 2000 up to 2017. Accordingly, 2.1 billion people gained access to at least basic sanitation services. Despite that, 2 billion people still have no access to safe and sustainable sanitation system, 673 million people are practicing open defecation, and 3 billion people still lack basic sanitation; consequently, the sanitation crisis remains a global concern.

The sixth sustainable development goal (SDG6) is designed to solve these global issues before the year 2030 (2020). The objective of SDG6-2 is to provide full coverage of adequate and sustainable sanitation for the entire population. Following this objective, innovative approaches have been applied on new disciplinary understandings of sanitation, to provide sustainable sanitation for low-income regions (Hyun et.al, 2019). Recently, national-scaled programs have been conducted to improve the notion of equity in sanitation to end critical challenges like open defecation (Jain et.al, 2024). Meanwhile, there are several indicators and indexes that are defined to monitor or evaluate the progress [Han 2017 and Bano 2018). One example is the water, sanitation, and hygiene (WASH) performance index suggested by Cronk et al. (2015), which can be utilized to compare the performances of countries in achieving universal water, sanitation, and hygiene. The elements of this index include water and sanitation access and equity (Jeyakumar 2021).

The development of these indexes is essential in achieving SDG6, because they present a comparative view of the progress of each country towards SDG6. Additionally, these indexes are useful for undertaking general national-scaled decisions to further progress towards fulfilling SDG6. Tribal poverty and vulnerability differ from rural poverty in three distinct ways: commoditization, environmental hazards, and social fragmentation (Pandey et.al, 2022). Poverty significantly contributes to poor sanitation and adversely affects the health of tribal communities. Tribal villages face severe limitations in resource utilization and allocation, perpetuating a cycle of health issues due to inadequate facilities. Tribal poverty is often assessed based on various factors,

including income and non-income determinants. Despite evidence of disparities within cities, there's a lack of comprehensive research on intra-city inequalities in well-being (Kharwar et.al, 2022).

Households in tribal areas lacking access to clean drinking water and sanitation are exposed to daily health risks. The public health infrastructure is inadequate, constrained by policy and administrative barriers (Ghosh et.al, 2023). Administrative hurdles in tribal regions hinder the effective delivery of health services, impacting availability, accessibility, affordability, and equity. Tribal development often occurs informally, predominantly within tribal areas or on the outskirts of cities. Sanitation efforts aim to enhance health by ensuring a clean environment and breaking the cycle of illness. Factors influencing sanitation include hygiene practices, available resources, appropriate technologies, socioeconomic development, cultural and political factors, capacity building, community behaviors, legislative measures, among others. Despite efforts, India lags behind many countries in environmental sanitation. Inadequate sanitation undermines water quality improvement efforts. Comprehensive interventions are necessary to address all transmission pathways effectively. Building sanitation systems tailored to community needs, especially for the poor, requires politically challenging decisions. Health, besides being crucial for economic growth and poverty alleviation, is an essential goal in itself.

Significance of the study

Studying the sanitation index for the Malasari tribe holds significant implications across multiple domains. Primarily, it sheds light on the crucial nexus between sanitation conditions and health outcomes within the community. By comprehensively evaluating the sanitation index, researchers can ascertain the prevalence of waterborne diseases and gastrointestinal illnesses, directly linking sanitation standards to community health. Improving sanitation infrastructure based on these findings can substantially mitigate health risks and enhance overall well-being among the Malasari tribe. Moreover, the study acknowledges the intrinsic link between sanitation and quality of life. Access to clean water and adequate sanitation facilities is not only a matter of health but also of dignity and socio-economic development. Enhancing sanitation conditions through tailored interventions can uplift living standards and contribute to the broader socio-economic advancement of the Malasari community.

Cultural considerations are paramount in understanding and addressing sanitation challenges among the Malasari tribe. Cultural beliefs, practices, and preferences profoundly influence sanitation behaviors and attitudes. Recognizing and respecting these cultural nuances are imperative for designing effective and culturally sensitive interventions that foster community engagement and ensure the long-term sustainability of sanitation initiatives. Furthermore, assessing the sanitation index offers insights into environmental sustainability. Poor sanitation practices can have detrimental effects on the environment, including water and soil contamination. By identifying environmentally friendly sanitation solutions, the study can contribute to mitigating these adverse environmental impacts and promoting ecosystem health in the Malasari tribal region. Overall, the study on the sanitation index for the Malasari tribe holds immense significance in improving health outcomes, enhancing quality of life, respecting cultural diversity, and fostering environmental sustainability within the community.

Methodology

The methodology for evaluating the sanitation index among the Malasari tribe in Annaikatti, Coimbatore district, involves a systematic approach to gather primary data through structured interviews. With a sample size of 100 participants, the methodology aims to provide a comprehensive understanding of sanitation practices within this community. The sampling strategy employs purposive sampling, ensuring representation across various demographic factors such as age, gender, and socio-economic status. This approach guarantees a diverse range of perspectives on sanitation practices prevalent among the Malasari tribe.

To facilitate data collection, a detailed interview schedule is developed. The schedule comprises open-ended questions designed to elicit information about sanitation facilities, hygiene practices, water sources, waste disposal methods, and perceptions of sanitation-related challenges. Trained interviewers conduct face-to-face interviews with the selected participants, employing the structured interview schedule. The interviews are conducted in the local language to ensure clarity and understanding. Prior to the interviews, participants provide informed consent, ensuring ethical conduct throughout the data collection process. The collected data undergo both qualitative and quantitative analysis. Qualitative analysis involves coding and thematic analysis of interview transcripts to identify recurring themes and patterns concerning sanitation practices and challenges. Quantitative analysis includes statistical measures to assess the prevalence of specific sanitation indicators and determine correlations between variables. Throughout the research process, rigorous quality assurance measures are implemented to ensure the reliability and validity of the findings. By employing this methodological framework, the study aims to provide valuable insights into sanitation practices within the Malasari tribe, facilitating targeted interventions to improve sanitation conditions and enhance community well-being.

Findings of the study

1. Socio-Demograph Characteristics

The Table (1) brings out the socio-demographic characteristics of the selected sample Malasari tribal respondents.

Table 1: Socio-Demographic Characteristics

Socio-Demographic Characteristics	Variables	Percentage (In %)
Age	20 – 30 yrs	19
	31 – 40 yrs	24
	41 – 50 yrs	12
	51 – 60 yrs	23
	Above 60 yrs	22
Gender	Male	26
	Female	74
Marital Status	Married	64
	Unmarried	26
	Divorced	5
	Widowed	5
Family Type	Nuclear	26
	Joint	74
Educational Qualification	Illiterate	62
	Schooling	38
Occupation	Working	82
	Not working	18
Monthly Income (In Rs.)	Less than 5000	52
	5000 – 10000	41
	Above 10000	7

Source: Primary Data, (2024)

In examining the socio-demographic characteristics of the sample population, it was observed that the distribution across various age groups was diverse. In the past study, the majority of participants fell within the age range of 31 to 60 years, with 24% being aged between 31 to 40 years, and 23% falling between 51 to 60 years. Additionally, a notable portion, constituting 19% of the sample, fell within the age group of 20 to 30 years. Participants aged above 60 years and those between 41 to 50 years accounted for 22% and 12% respectively. Regarding gender distribution, in the past study, a higher proportion of female participants, comprising 74% of the sample, was observed compared to male participants, who represented 26% of the population. This gender distribution highlights the predominance of female representation within the sample.

Examining marital status, the majority of participants were observed to be married, constituting 64% of the sample population. Unmarried individuals accounted for 26%, while a smaller percentage represented divorced (5%) and widowed (5%) participants. In terms of family type, the study noted a significant prevalence of joint family structures, accounting for 74% of the sample, while nuclear families represented 26% of the population. Educationally, a majority of participants were observed to be illiterate, comprising 62% of the sample, while 38% had received some form of schooling. Regarding occupation, the past study found that a large proportion of participants were engaged in some form of work, constituting 82% of the sample, while 18% were not currently employed. Finally, examining monthly income levels, the majority of participants had incomes below Rs. 5000, representing 52% of the sample. Those with incomes ranging between Rs. 5000 to 10000 constituted 41% of the population, while only 7% reported incomes above Rs. 10000.

2. Drinking water facility available for the Malasari tribes.

The following table (2) brings out the details about the drinking water facility available for the selected respondents.

Table -2: Drinking water facility available for the Malasari tribes

Drinking Water Facility	Variables	Percentage (In %)
Source of Drinking Water	Piped Water	40
	Groundwater	30
	Surface Water	30
Distance from Home	< 50m	25
	50 – 100m	35
	100 – 500m	20
	> 500m	20

Quality of Water	Clean	50
	Blackish	10
	Muddy	25
	Smelly	15
Purification of Water	Yes	75
	No	25
Method Used	Strain by Cloth	25
	Water Filter	20
	Boiling	30
	Electric Purifier	15
	NA	10

Source: Primary Data, (2024)

Regarding the source of drinking water, the study found that a significant portion of respondents, constituting 40%, relied on piped water as their primary source, while 30% depended on groundwater and 30% accessed surface water. This distribution indicates a mixed reliance on different water sources within the tribal community. In terms of the distance from home to the water source, the study revealed that 25% of respondents had water sources located less than 50 meters away, while 35% had sources within a range of 50 to 100 meters. Furthermore, 20% had sources situated between 100 to 500 meters, and an additional 20% had to travel more than 500 meters. This distribution suggests varying degrees of accessibility to clean water within the tribal community.

Assessing the quality of water, it was observed that 50% of respondents reported clean water, while 10% described it as blackish, 25% as muddy, and 15% as smelly. This diversity in water quality highlights potential challenges faced by the community in accessing safe and potable water. Concerning water purification practices, the study found that a majority of respondents, comprising 75%, purified their water. Among those who purified water, the most common methods included boiling (30%), followed by the use of water filters (20%), straining by cloth (25%), and electric purifiers (15%). Additionally, 10% of respondents reported not purifying their water. These findings underscore the importance placed on water purification within the community and the various methods employed to ensure water safety. Overall, the past study provides valuable insights into the sanitation and hygiene practices of the Malasari tribal respondents, highlighting the challenges and strategies adopted in accessing and ensuring the quality of drinking water within the community.

3. Solid waste management

The following table (3) brings out the details about the solid waste management adopted by the malasari tribes.

Table -3: Solid waste management adopted by the Malasari Tribes.

Solid Waste Management	Variables	Percentage (In %)
Generation of Waste	Less than 2 kg	8
	2 – 5 kg	69
	Above 5 kg	13
Collection of Waste	Local Authority	24
	Private Agency	13
	Corporation Workers	58
	Others	5
Disposal of Waste	Open Yard	51
	Dustbin	20
	Streets	13
	Unused Plot of Lands	6

Source: Primary Data, (2024)

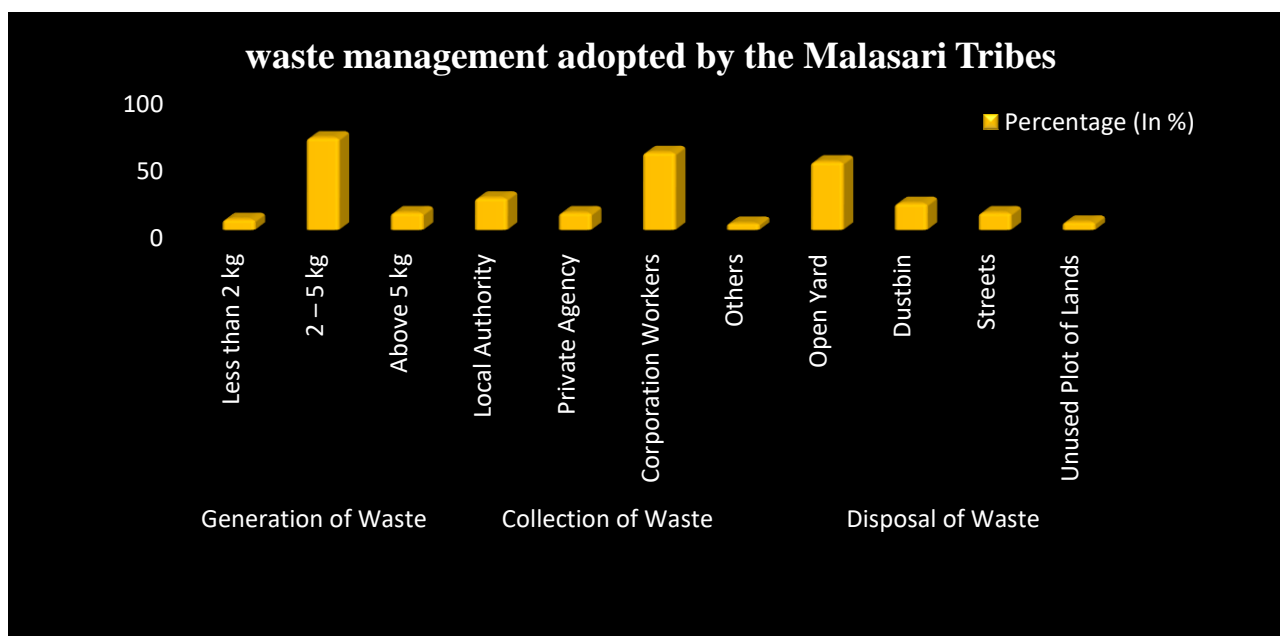


Figure -1 Solid waste management adopted by the Malasari Tribes

Regarding waste generation, it was observed that 8% of respondents generated less than 2 kg of waste, while a majority, comprising 69%, produced between 2 to 5 kg. Additionally, 13% reported generating more than 5 kg of waste, indicating varying levels of waste production among respondents. In terms of waste collection, the study found that a significant proportion, accounting for 24%, relied on local authorities for waste collection services. Private agencies were responsible for waste collection for 13% of respondents, while the majority, comprising 58%, depended on corporation workers. A small percentage of respondents, constituting 5%, reported other means of waste collection. Assessing waste disposal practices, it was noted that 51% of respondents disposed of waste in open yards, while 20% used dustbins for disposal. Furthermore, 13% reported disposing of waste on streets, and 6% utilized unused plots of lands for waste disposal. This distribution indicates a predominant reliance on open yards for waste disposal within the community.

4. Drainage and toilet facility

The following table brings out details about the drainage facility and toilet facility.

Table – 4 : Drainage and toilet facility Malasari Tribes

Drainage Facility	Percentage (In %)
Yes	29
No	71

Source: Primary Data, (2024)

The examination of drainage facilities among the Malasari tribes revealed critical insights into their sanitation infrastructure. As per the findings presented in Table 4, a staggering 71% of respondents reported the absence of any form of drainage system in their households. This high percentage underscores a significant deficiency in drainage infrastructure within the Malasari tribal community.

Without proper drainage facilities, the community faces various challenges related to water management, sanitation, and health. The absence of drainage systems can lead to stagnant water accumulation, increasing the risk of waterborne diseases and breeding grounds for mosquitoes and other vectors. Moreover, during monsoon seasons or heavy rainfall, the lack of drainage exacerbates the likelihood of flooding, posing additional risks to the health and safety of the community members.

In contrast, the 29% of respondents who reported having drainage facilities, albeit a minority, likely experience improved sanitation conditions and reduced health risks compared to those without drainage. Properly managed drainage systems can efficiently channel wastewater away from residential areas, minimizing the chances of waterlogging and associated health hazards.

Addressing the dearth of drainage facilities among the Malasari tribes is crucial for promoting community health, safety, and well-being. Interventions aimed at improving drainage infrastructure, such as the installation of proper drainage channels and the implementation of wastewater management systems, are essential to mitigate the adverse impacts of poor drainage on the community's health and living conditions. Additionally, community engagement and capacity-building initiatives can empower the Malasari tribes to actively participate in the maintenance and sustainability of improved drainage facilities, ensuring long-term benefits for their sanitation and overall quality of life.

Table -5 Toilet facility of Malasari Tribes

Toilet Facility	Variables	Percentage (In %)
Separate Toilet Facility	Yes	24
	No	76

Source: Primary Data, (2024)

The examination of toilet facilities among the Malasari tribes unveils significant challenges in sanitation infrastructure within the community. As depicted in Table 5, a substantial majority, accounting for 76% of respondents, reported the absence of a separate toilet facility in their households. This high percentage underscores a glaring deficiency in sanitation amenities among the Malasari tribal community. The lack of separate toilet facilities poses multifaceted challenges to the community's health, dignity, and overall well-being. Without access to proper sanitation facilities, community members are compelled to resort to open defecation or makeshift arrangements, which can lead to environmental pollution, contamination of water sources, and increased vulnerability to waterborne diseases. Moreover, the absence of private toilet facilities compromises the dignity and privacy of individuals, particularly women and children, who may face safety risks and discomfort while attending to their sanitation needs.

Conversely, the 24% of respondents who reported having a separate toilet facility likely experience improved sanitation conditions and better health outcomes compared to those without access to such facilities. Separate toilet facilities not only contribute to maintaining hygiene and preventing the spread of diseases but also enhance the overall quality of life and dignity of community members. Addressing the lack of toilet facilities among the Malasari tribes is paramount for promoting health, dignity, and social development within the community. Interventions aimed at improving sanitation infrastructure, such as the construction of community toilets, promoting hygiene education, and advocating for behavioral change, are essential steps toward addressing this pressing issue. Additionally, ensuring equitable access to sanitation facilities, particularly for vulnerable groups such as women, children, and the elderly, is crucial for fostering inclusive and sustainable development within the Malasari tribal community.

5. Sanitation Index

The following table brings out the details about the sanitation index for the selected malasari tribes.

Table -6 Sanitation Index

Composite Index	No. of Households (in %)	Inference
1 – 1.75	45.52	Poor
1.75 – 2.50	33.23	Average
2.50 – 3.25	18.45	Fair
3.25 – 4.00	2.80	Good

Source: Primary Data, (2024)

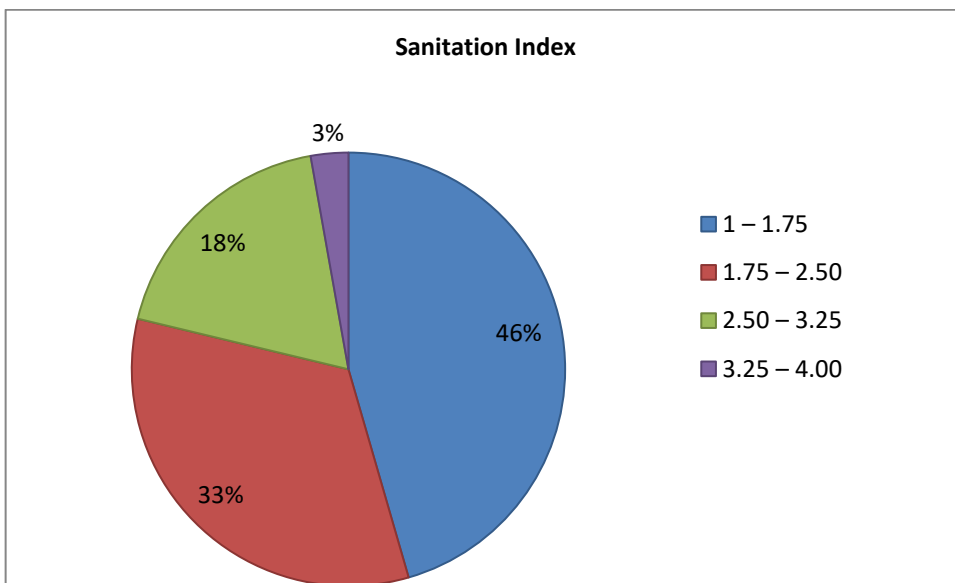


Figure -2 Sanitation Index

The composite index analysis sheds light on the overall sanitation conditions within the Malasari tribal community, providing valuable insights into the distribution of households across different levels of sanitation quality. As indicated in Table 6, the majority of households, comprising 45.52%, fell within the

range of 1 to 1.75, categorized as "poor" sanitation. This high percentage underscores significant deficiencies in sanitation infrastructure and practices among a substantial portion of the community.

Furthermore, a considerable proportion of households, totaling 33.23%, were classified as having "average" sanitation, falling within the index range of 1.75 to 2.50. While representing a lower percentage compared to poor sanitation, this category still highlights the need for substantial improvements in sanitation facilities and behaviors to enhance overall cleanliness and health outcomes within the community.

A smaller but noteworthy portion of households, accounting for 18.45%, were categorized as having "fair" sanitation, with composite index scores ranging from 2.50 to 3.25. This indicates relatively better sanitation conditions compared to the previous categories, suggesting some progress in sanitation infrastructure and practices among these households.

Finally, a minimal percentage of households, comprising only 2.80%, were classified as having "good" sanitation, falling within the index range of 3.25 to 4.00. While representing a small portion of the community, this category signifies exemplary sanitation conditions characterized by well-maintained infrastructure and hygienic practices. Overall, the composite index analysis underscores the urgent need for targeted interventions to improve sanitation infrastructure, promote hygiene education, and foster behavioral change within the Malasari tribal community. By addressing the root causes of poor sanitation and striving for equitable access to sanitation facilities and services, policymakers and stakeholders can work towards enhancing the health, dignity, and well-being of all community members.

Conclusion

The examination of the sanitation index among the Malasari tribes reveals a complex landscape of challenges and opportunities in promoting health, dignity, and well-being within the community. Through the assessment of various parameters including drainage facilities, toilet availability, and composite sanitation index, several key conclusions can be drawn. Firstly, the majority of households within the Malasari community face significant deficiencies in sanitation infrastructure, with a substantial proportion lacking proper drainage systems and separate toilet facilities. This highlights the urgent need for targeted interventions to address these gaps and improve sanitation access for all community members.

Additionally, the composite sanitation index analysis demonstrates a predominant prevalence of poor and average sanitation conditions among the surveyed households, indicating widespread challenges in maintaining cleanliness and hygiene standards within the community. While a minority of households exhibit fair to good sanitation, efforts to elevate sanitation standards across the board are imperative for promoting health and well-being among all community members. In conclusion, addressing the sanitation challenges among the Malasari tribes requires a multifaceted approach that integrates infrastructure development, hygiene education, and community engagement initiatives. By prioritizing equitable access to sanitation facilities, promoting behavioral change, and fostering partnerships between stakeholders, policymakers and organizations can work towards realizing the goal of improved sanitation and enhanced quality of life for the Malasari tribal community.

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