Journal of Pioneering Medical Sciences
Received: February 01, 2025 | Accepted: February 27, 2025 | Published: April 27, 2025
Volume 14, Issue S01, Pages 140-147

DOI https://doi.org/10.47310/jpms202514S0118

Oral Health Challenges and Barriers to Dental Care Access Among Narikuravar Gypsies in Chennai: A Cross-Sectional Study

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Abstract **Introduction:** Oral health is a crucial component of overall well-being, extending beyond healthy teeth to impact systemic health and quality of life. The Narikuravar community, an indigenous tribal group predominantly involved in hunting as their primary occupation, faces numerous challenges in accessing healthcare services. This study aims to assess the oral health status and barriers to dental care utilization among the Narikuravar tribal gypsies living in Chennai. **Methods:** This cross-sectional study was conducted among the Narikuravar tribal gypsies residing in Thirumullaivoyal, Chennai. All available individuals aged 18 years and above who were permanent residents of the area were included. Oral health status was evaluated using the WHO Oral Health Assessment Proforma (2013), which assesses dental caries, gingivitis, periodontitis, dental trauma and treatment needs. The OHI-S index was employed to measure oral hygiene status. To identify perceived barriers to dental care, a pretested questionnaire was administered. Data analysis was performed using SPSS Software version 23.0 and descriptive statistics along with Pearson's correlation test were used to assess associations, with $p<0.005$ considered statistically significant. **Results:** A total of 460 participants were included in the study, with 55% (n = 253) being male and 45% (n = 197) female. The mean DMFT score was 13.1±5.56, indicating a high prevalence of dental caries in the population. Regarding oral hygiene, 65.1% (n = 280) of participants had a fair OHI-S score, while 41.5% (n = 238) required comprehensive dental evaluation and treatment. The most commonly reported barrier to dental care utilization was a lack of awareness about the importance of oral hygiene, followed by financial constraints and limited access to dental services. **Conclusion:** The findings reveal that the Narikuravar community faces significant barriers in accessing dental care, contributing to poor oral health outcomes. The study highlights the urgent need for targeted educational programs, community-based dental outreach services and improved access to affordable dental care. Public health strategies should focus on enhancing awareness, promoting preventive dental care practices and implementing mobile dental clinics to reduce these barriers and improve oral health outcomes in this marginalized population.

Key Words Oral Health, Dental Care Barriers, Narikuravar Community, Tribal Population, Oral Hygiene, DMFT

INTRODUCTION

In the modern world, there remain communities living in relative isolation, maintaining their traditional beliefs, values, practices and cultural norms. These communities are referred to as tribes and India is home to 75 such tribal groups that are officially recognized. The Government of India has designated several of these groups as primitive tribal populations across 15 states and union territories based on their pre-agricultural lifestyle, low literacy levels and stagnant or declining populations. These tribal groups predominantly reside in remote forest regions, often in hamlets, making them geographically and socially isolated [1,2].

The Narikuravar community, commonly referred to as "fox people" or "jackal people," is one such tribal gypsy group native to Tamil Nadu, India. Traditionally hunters by occupation, the Narikuravars faced challenges continuing

their primary livelihood due to forest restrictions and environmental changes. Consequently, they shifted to crafting and selling beaded decorations as a means of subsistence. This occupational shift required them to adopt a nomadic lifestyle, frequently moving to different locations to sell their products. The Narikuravars speak Vagriboli, a language shared with other tribal groups in Tamil Nadu, which has no written script [3-5].

The term oral health-related quality of life (OHRQoL) reflects the impact of oral health on an individual's overall well-being, including their ability to eat, sleep and engage socially. Understanding how individuals perceive the impact of oral health issues on their quality of life is essential for addressing their unique healthcare needs [6]. OHRQoL is widely used for assessing dental treatment outcomes, developing public health interventions and shaping appropriate healthcare policies for marginalized populations.

Despite global advancements in oral healthcare, dental caries and periodontal diseases remain prevalent among underserved communities, especially those facing socio-economic disadvantages. Historical records show that dental caries has existed since early human history, with the prevalence escalating due to dietary changes in the 18th century, particularly the refinement of foods and increased sugar consumption. Periodontal disease, which ranges from mild to severe, continues to be the most widespread dental condition globally [7-9].

The Narikuravar community faces significant social and economic challenges that further exacerbate their oral health problems. Factors such as poor living conditions, low educational attainment, homelessness, social marginalization and discrimination increase their vulnerability to poor health outcomes [10,11]. Limited awareness about oral hygiene, combined with their restricted access to healthcare services, contributes to a high burden of untreated dental conditions. Furthermore, the frequent use of tobacco and alcohol within this community further deteriorates their oral health.

Education on the importance of oral hygiene and accessible dental care services is crucial in improving the oral health outcomes of the Narikuravar community. Raising awareness can help eliminate misconceptions and encourage individuals to seek timely dental care rather than delaying or avoiding treatment [12].

With this context, the present study aims to assess the oral health status and the perceived barriers to dental care utilization among the Narikuravar tribal gypsies living in Chennai. By identifying these barriers, the study aims to provide insights that can guide targeted public health interventions to improve oral healthcare access for this marginalized population.

METHODS

The present study was a cross-sectional study conducted among the Narikuravar tribal gypsy community residing in Thirumullaivoyal, Chennai, during April 2024. Ethical approval for the study was obtained from the Saveetha University Research Board (SRB/SDC/UG-1886/23/PHD/039).

Inclusion criteria for the study included all Narikuravar individuals who were residents of the Chennai district, regardless of age. Participants who were willing to participate and provided informed consent were included. For participants under the age of 18 years, consent was obtained from their parents or guardians.

Exclusion criteria included individuals who were bedridden or those who refused to participate in the study.

Before data collection, participants were informed about the study's objectives and confidentiality was assured to all participants to ensure their privacy and comfort during the research process. Informed consent was obtained from each participant before data collection.

Assessment of Oral Health Status

The oral health status of the participants was assessed using the WHO Oral Health Assessment Proforma (2013). This comprehensive tool evaluated dental conditions such as dental caries, gingivitis, periodontitis, dental trauma and treatment needs [13].

Oral hygiene status was assessed using the Oral Hygiene Index-Simplified (OHI-S), developed by John C. Greene and Jack R. Vermillion in 1964. This index provided an objective measure of participants' oral hygiene status, enabling the identification of those requiring improved dental care practices [14].

Assessment of Barriers to Dental Care Utilization

A pretested questionnaire was administered to evaluate the perceived barriers to dental care utilization. The questionnaire included questions related to:

- Oral hygiene practices
- Dental problems experienced
- Access to dental services
- Factors preventing participants from seeking dental care

The questionnaire was carefully designed to be culturally sensitive and simple to comprehend, ensuring the participants could provide accurate and meaningful responses.

Data Analysis

Data were analyzed using IBM SPSS Statistics for Windows, Version 23.0 (IBM Corp., Armonk, NY). Descriptive statistics, including frequency and percentage, were used to

summarize data related to participant demographics (age and gender) and the distribution of oral conditions such as gingivitis, periodontitis, fluorosis, dental trauma, treatment needs and oral hygiene status.

The mean and standard deviation were calculated for the DMFT scores to assess the prevalence of dental caries in the study population.

To identify associations between perceived barriers to dental care utilization and the urgency of required dental interventions, the chi-square test was employed.

Furthermore, to evaluate the correlation between perceived barriers to dental care and DMFT scores, Kendall tau correlation was applied. A p-value of <0.05 was considered statistically significant.

This enhanced methodology ensures improved data reliability by including comprehensive participant inclusion criteria, detailed descriptions of assessment tools and appropriate statistical analysis techniques. The refined methods aim to provide clearer insights into the oral health status and challenges faced by the Narikuravar tribal community in accessing dental care services.

RESULTS

The present study included a total sample size of 460 participants from the Narikuravar tribal gypsy community. The age-wise distribution of the population was as follows: 16.9% were aged 1-18 years, 28.5% were aged 19-35 years, 35.6% were aged 36-50 years and 19% were aged 51-70 years (Table 1).

The gender distribution of the population indicated that 55% of the participants were males and 45% were females (Table 2).

The mean DMFT score of the study population was 13.1±5.56, indicating a high prevalence of dental caries in this community (Table 3).

Dental findings revealed that a significant proportion of the population experienced dental issues. A total of 361 participants (78.5%) were diagnosed with dental caries, while 197 participants (42.9%) had periodontitis and 72 participants (15.6%) had dental fluorosis. Additionally, 21 participants (4.5%) had experienced dental trauma (Figure 1).

Assessment of oral hygiene status using the OHI-S index revealed that 283 participants (61.5%) had fair oral hygiene, 141 participants (30.7%) had poor oral hygiene and only 36 participants (7.69%) demonstrated good oral hygiene (Figure 2).

Regarding the treatment needs of the population, 238 participants (46.15%) required a comprehensive dental evaluation followed by treatment, while 120 participants (30.77%) required prompt treatment for urgent dental conditions. Preventive treatment was indicated for 46 participants (15.36%) and only 6 participants (7.69%) required no dental intervention (Figure 3).

The barriers perceived by the Narikuravar community in accessing dental care were notably significant. The most common barrier was a lack of knowledge about oral health and dental care, reported by 212 participants (46.15%). Additionally, 177 participants (38.46%) reported a negative attitude towards dental care, while 71 participants (15.38%) cited low socioeconomic status as a key barrier (Figure 4).

The relationship between the identified barriers and the urgency of dental treatment was assessed using the chi-square test, which revealed a significant association between these factors (Table 4).

Furthermore, the Kendall tau correlation test was employed to evaluate the relationship between perceived dental care barriers and DMFT scores. The results demonstrated a strong positive correlation, indicating that individuals with higher DMFT scores were more likely to experience multiple barriers in accessing dental care services (Table 5).

Table 1: Distribution of the study population according to their age

Age group	N (%)
1-18	78 (16.9)
19-35	126 (28.5)
36-50	164 (35.6)
51-70	82 (19)
Total	460

Table 2: Distribution of study population according to their gender

Gender	N (%)
Males	253 (55)
Females	197 (45)
Total	460

Table 3: Mean DMFT score of the study population

Mean DMFT		
N	Mean	SD
460	13.1	5.56

Table 4: Association between the barriers in dental care and the type of treatment intervention required by the population

	Treatment intervention						
Barriers in utilization of dental care	NIL	Preventive	Prompt	Urgent	Comprehensive	Total	p-value
Lack of knowledge	0	20	53	10	89	250	0.000*
Bad attitude	3	14	46	13	126	125	
Low SES	3	12	11	27	23	85	
Total	6	46	120	50	238	460	

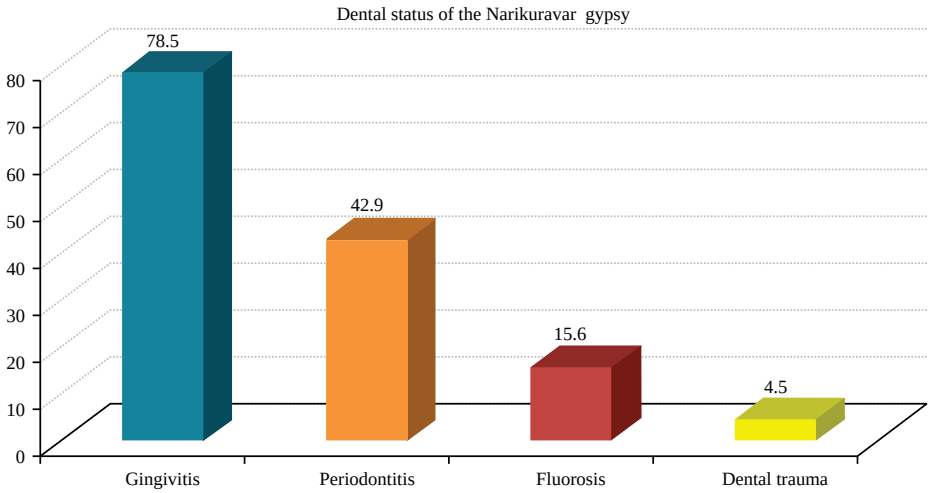

Figure 1: Dental status of the Narikuravar gypsy

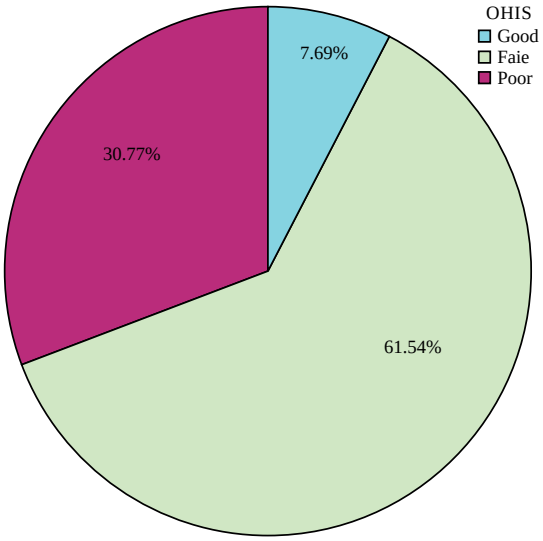

Figure 2: OHI-S score of the Narikuravar population

Table 5: Kendall's tau_b correlation table between the barriers in dental care utilization and DMFT scores

Correlation between barriers in utilisation of dental care and DMFT scores of study population		Barriers	DMFT
Barriers	Correlation coefficient	1.000	0.89*
	Sig. (2-tailed)	-	0.030
	N	460	460
DMFT	Correlation coefficient	0.89*	1.000
	Sig. (2-tailed)	0.030	-
	N	460	460

These findings highlight the urgent need for targeted interventions to address knowledge gaps, improve attitudes toward dental care and reduce financial barriers to promote better oral health outcomes among the Narikuravar tribal population

DISCUSSION

Cultural norms and traditional beliefs play a crucial role in shaping health-related behaviors, including the recognition of diseases and the utilization of healthcare services. In tribal communities like the Narikuravars, cultural practices can

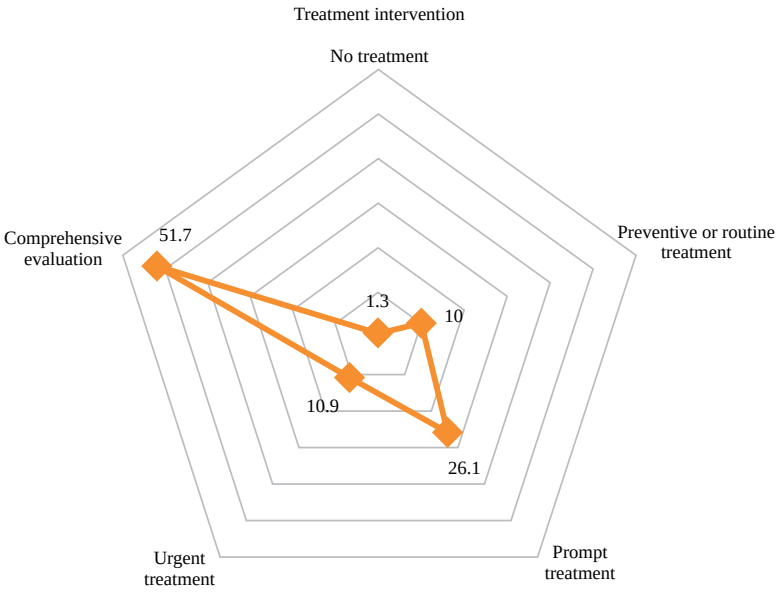

Figure 3: Requirement of Treatment needs for the Narikuravar population

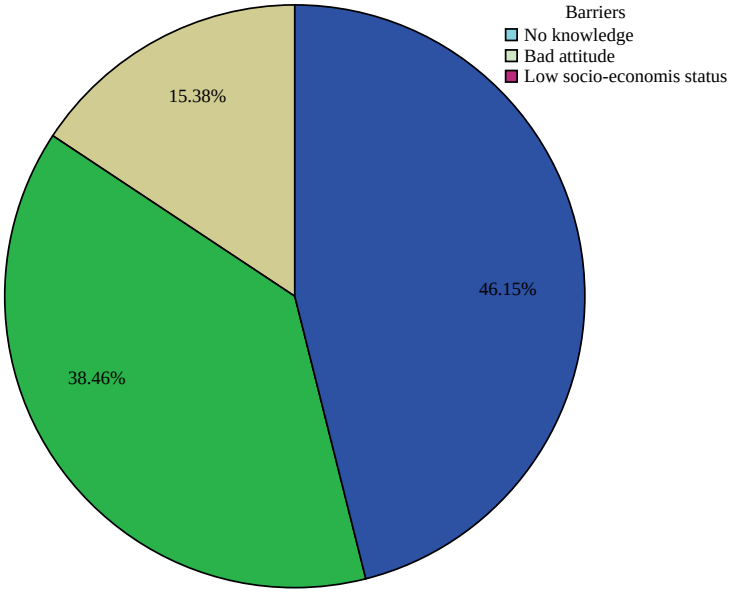

Figure 4: Barriers perceived by the Narikuravar population in utilization of the dental health

either facilitate or hinder access to healthcare. Various studies have demonstrated a link between ethnicity, oral health status and dental care practices, which are often influenced by cultural beliefs and socioeconomic challenges [13].

The World Health Organization emphasizes that improving healthcare access and promoting a healthy lifestyle are key global priorities. However, the utilization of dental services is largely influenced by the individual's perceived need for treatment. Perceived need is recognized as a significant predictor of dental service utilization, making it vital to address factors that influence how marginalized populations assess their oral health [14].

The present study revealed a mean DMFT score of 13.1±5.56, which is notably high and reflects a significant prevalence of dental caries and multiple missing teeth, largely due to chronic untreated dental caries. This finding aligns with a study by Neelamana et al., where the average DMFT score was 11, further confirming that dental caries is highly prevalent in marginalized communities with limited access to dental care services [15]. Additionally,

Schamschula *et al.* [16] reported that DMFT values tend to increase with age, rising from 17.1 at 20 years to 20.7 at 35 years, indicating that poor lifestyle habits, including inadequate oral hygiene practices, contribute significantly to worsening oral health conditions.

Periodontal disease, a chronic inflammatory condition affecting the supporting structures of the teeth, was also prevalent in this study. The findings showed that 42.9% of participants had periodontitis and 78.5% experienced gingivitis. This aligns with a study conducted by Nisha et al., which found that 73.3% of the tribal community in the Attapady block experienced gingival bleeding [17]. Conversely, Asif *et al.* [18] reported that 63.3% of the Koya tribal gypsies had periodontitis, reinforcing that poor oral hygiene, coupled with risk factors like tobacco use, alcohol consumption and malnutrition, can increase susceptibility to periodontal disease.

Oral hygiene assessment using the OHI-S index revealed that only 7.69% of the participants had good oral hygiene, while 61.5% demonstrated fair hygiene and 30.7% had poor oral hygiene. This is consistent with a study by Haque et al., where the mean OHI-S score was 2.69±1.10 among the Santhal tribal community in West Bengal [19]. Similarly, Shrivatsav et al. found comparable OHI-S scores of 2.56±0.82 and 2.51±0.93 among the Koya and Lambda tribal groups, respectively [20].

In the present study, around 46.15% of the participants required comprehensive dental evaluation and subsequent treatment, while 30.77% required prompt intervention. Only 15.36% required preventive treatment and 7.69% needed no dental care at the time of assessment. This finding reflects a substantial treatment backlog, possibly due to inadequate oral hygiene awareness and poor dental care practices. Naidu *et al.* [21] similarly reported that 77% of tribal children between 6 and 15 years required prompt treatment, with a smaller percentage requiring preventive care or restorative interventions.

The study also revealed that self-treatment was common among the Narikuravar community, with many individuals relying on home remedies or self-prescribed methods to manage dental emergencies. This behavior reflects a deep-rooted reliance on traditional beliefs, compounded by limited access to healthcare professionals and a preference for self-reliance. This aligns with findings reported by previous researchers who observed that self-treatment practices are prevalent in isolated and marginalized communities, where professional healthcare services are either unavailable or underutilized [22].

Barriers to dental care utilization were significant in this population. The most frequently reported barrier was insufficient knowledge about oral hygiene practices and the importance of dental care, identified in 46.15% of participants. Additionally, 38.46% of participants displayed a poor attitude toward dental care and 15.38% reported that low socioeconomic status restricted their access to dental services. These findings support observations made in previous studies where lack of awareness, negative attitudes and financial constraints were identified as major obstacles in tribal healthcare access [23].

A significant positive association was identified between the perceived barriers and the urgency of treatment intervention (Table 4). This suggests that as barriers to dental care increase, the need for more intensive dental interventions also rises. This aligns with the present study's finding that the population with higher DMFT scores experienced a greater number of barriers to dental care, as confirmed by the Kendall tau correlation test, which showed a strong positive correlation (p-value = 0.03) (Table 5).

The present study adds to the limited literature available on the Narikuravar gypsy community by exploring their unique healthcare challenges. Unlike previous studies that primarily assessed oral health outcomes alone, this study highlights the strong connection between healthcare barriers and treatment needs.

Oral health plays a pivotal role in maintaining overall well-being, especially for tribal populations who are often marginalized and isolated from mainstream healthcare services. The lack of awareness, combined with financial and social constraints, further exacerbates their vulnerability to oral diseases. The World Health Organization recommends continuous monitoring of oral health status and treatment needs in vulnerable populations to ensure targeted healthcare interventions and appropriate resource allocation [24,25].

Despite global advancements in healthcare delivery, this study highlights that nomadic and tribal communities continue to face significant obstacles in accessing medical and dental care. Effective strategies to address these barriers must include improving primary healthcare access, developing culturally sensitive education programs and implementing mobile dental clinics to reach remote tribal settlements. Strengthening primary healthcare networks will foster better communication between healthcare providers and tribal populations, ultimately improving oral health outcomes [26].

CONCLUSION

The findings of the present study reveal that the oral hygiene status among the Narikuravar tribal gypsy community is notably poor. This poor oral health can be attributed to a combination of factors, primarily a lack of awareness about the importance of maintaining good oral hygiene and seeking timely preventive treatment. The study further demonstrates a clear association between oral health status and the barriers faced in accessing dental care.

The Narikuravar community exhibited negligence toward oral health, which was compounded by deeply rooted misbeliefs and cultural practices that discourage proactive dental care. These misconceptions, coupled with financial constraints and poor healthcare accessibility, have contributed to inadequate oral hygiene practices and limited utilization of

dental services. To improve oral health outcomes, it is essential to address these barriers by promoting awareness programs, providing accessible dental care and ensuring preventive interventions are implemented.

The results emphasize the urgent need for targeted oral healthcare strategies that are culturally sensitive, practical and tailored to the specific challenges faced by the Narikuravar community. Special emphasis should be placed on promoting oral hygiene education, improving access to preventive dental care and addressing financial barriers to treatment.

In conclusion, this study highlights a concerning trend of high dental caries prevalence, poor oral hygiene and limited dental care access among the Narikuravar tribal gypsies in Chennai. The findings underscore the necessity for immediate and targeted public health interventions to mitigate these challenges. Policymakers and healthcare providers must focus on implementing community-driven awareness campaigns, mobile dental care services and school-based dental education programs to bridge the gap in oral healthcare access.

Collaborative efforts involving government agencies, non-governmental organizations and local communities will be vital in developing sustainable oral healthcare strategies for this marginalized population. By establishing culturally appropriate healthcare solutions and removing existing barriers, the oral health burden of the Narikuravar community can be significantly reduced, thereby improving their overall well-being and quality of life.

Conflict of Interest

The authors declare that they have no conflicts of interest to disclose.

Source of Funding

This research was conducted with no external funding.

Acknowledgement

The authors would like to express their heartfelt gratitude to the Department of Public Health Dentistry of Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences and Saveetha University for their unwavering support and guidance throughout this research. The authors also extend their thanks to the management for their constant encouragement and assistance in conducting this study successfully.

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