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Measurement of oral Health Literacy (Reald 30) and oral Health Status Among government school teachers in Thiruvallur district-A cross sectional study

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ABSTRACT

Aim:

To assess the oral health literacy (OHL) using the Rapid Estimate of Adult Literacy in Dentistry (REALD-30) and evaluate the oral health status, including gingival health and dental caries experience, among government school teachers in the Thiruvallur district of Tamil Nadu.

Introduction:

Oral health literacy is a critical determinant of oral health outcomes, influencing self-care, preventive practices, and treatment decisions. School teachers play a vital role in health promotion among children, yet their own oral health awareness and status remain underexplored. This study investigates the OHL and oral health status among government school teachers, aiming to inform future health education interventions.

MaterialsandMethods:

A cross-sectional study was conducted among 190 government school teachers in Thiruvallur district, selected through multistage cluster random sampling. OHL was assessed using the REALD-30 tool. Gingival health was evaluated using the Silness and Löe Plaque Index, and dental caries experience was measured through the DMFT index based on WHO criteria. Data were analyzed using SPSS version 25.0.

Results:

The majority of participants demonstrated moderate to adequate oral health literacy, with younger teachers tending to score higher on REALD-30. Gender-based analysis revealed better gingival health among female participants. The DMFT scores indicated a notable prevalence of dental caries across the study population, underscoring the need for preventive care, even among educated professionals.

Conclusion:

The findings reveal a moderate level of oral health literacy among government school teachers, with disparities based on age and gender. Despite higher educational attainment, gaps in oral health knowledge and practices persist. Strengthening oral health education within teacher training programs and integrating school-based oral health promotion can enhance both teacher and student outcomes.

Keywords: Oral Health Literacy, REALD-30, Government School Teachers, Gingival Health, Dental Caries, DMFT, Silness and Löe Index, Thiruvallur District, Health Education, Cross-Sectional Study

INTRODUCTION:

Oral health is an essential element of general health, influencing quality of life, social interaction, self-esteem, and overall well-being. Despite being largely preventable, oral diseases remain a significant public health burden worldwide, affecting an estimated 3.5 billion people according to the Global Burden of Disease Study(1). In many low- and middle-income countries like India, the incidence of dental caries, periodontal disease, and other oral pathologies is high, often due to lack of awareness, poor oral hygiene practices, and limited access to professional dental care(2).

A growing body of evidence has underscored the importance of Oral Health Literacy (OHL) as a pivotal determinant in oral health outcomes. OHL is defined as the degree to which individuals can obtain, process, and understand basic oral health information and services to make appropriate health decisions.(3) It encompasses not only reading and writing skills but also communication, cultural understanding, and decision-making capabilities related to dental care. Low levels of OHL are associated with poor self-care behaviors, delayed diagnosis, increased dental anxiety, higher treatment costs, and adverse oral health outcomes(4).

To assess OHL in the population, validated tools such as the Rapid Estimate of Adult Literacy in Dentistry (REALD-30) have been developed. This tool evaluates word recognition of dental terms and has been widely used in both community and clinical settings to identify individuals at risk of low oral health literacy(5). Understanding the level of OHL within specific subgroups of the population is essential for developing tailored interventions that promote health equity and improve oral health behaviors(5).

Among the most strategically positioned community members to influence public health outcomes are school teachers(6). Teachers not only educate children academically but also play a critical role in shaping their health behaviors during formative years. As trusted figures in society, their attitudes, knowledge, and behaviors have a ripple effect—impacting students, families, and communities(7). The school setting itself has been recognized globally, notably by the World

Health Organization's Global School Health Initiative, as a prime environment for implementing health promotion strategies

Despite their educational background, studies have shown that many school teachers possess inadequate knowledge about oral health and may unknowingly perpetuate myths or inaccuracies. This is particularly concerning given their role in health education and behavioral modeling. By assessing and enhancing the OHL of teachers, we can leverage their influence to instill accurate oral health practices in children, thereby supporting long-term improvements in community oral health(8).

In India, government school teachers form a large and stable workforce with regular contact with children from diverse socioeconomic backgrounds. Assessing their OHL is critical for several reasons: it provides insight into existing educational gaps, highlights areas needing targeted training, and offers an opportunity to integrate oral health education into broader school curricula(9).

The present cross-sectional study is designed to evaluate the oral health literacy and oral health status of government school teachers in the Thiruvallur district of Tamil Nadu, using the REALD-30 tool. In addition, gingival health and dental caries experience were assessed using standardized indices. The outcomes of this study are expected to inform future school-based oral health interventions, contribute to curriculum development, and support policy recommendations aimed at reducing the burden of oral diseases through empowered educators.

Materials and Methods

Study Design and Setting

This was a cross-sectional study. We collected information at one specific point in time. The study took place among government school teachers in the Thiruvallur district of Tamil Nadu, India. Our main goal was to find out how oral health literacy connects with actual oral health. This included looking at gingival health and how much dental caries (tooth decay) teachers had experienced.

Study Population and Sampling Frame

The people we wanted to study were government school teachers who work in the Thiruvallur district. We got a complete list of all teachers from every government school in the district. This full list served as our sampling frame, meaning it was the pool from which we selected participants.

Sampling Technique

We used a multistage cluster random sampling method. This helped make sure the teachers chosen represented the entire group well. First, we randomly picked some government schools from different areas, or blocks, within the district. Then, from these chosen schools, we randomly selected individual teachers to join the study. We picked this method because it made the sampling process more efficient and easier to do given our resources.

Sample Size

Based on calculations for this type of study design, we recruited a total of 190 participants. This number of participants was enough. It provided enough statistical power to find important connections between oral health literacy and the various oral health measures.

Data Collection Tools

We used three standard tools to gather information for the study.

For Oral Health Literacy Assessment, we used the Rapid Estimate of Adult Literacy in Dentistry (REALD-30). This tool is well-proven. It checks if a person can recognize and correctly say common dental words. This helps us understand their practical knowledge of oral health.

To check Gingival Health, we used the Silness and Löe Plaque Index. This index looks at how much plaque has built up on teeth. It also checks the condition of the gums. The scale goes from 0, meaning no inflammation, up to 3, which means severe inflammation and bleeding that happens easily.

Dental Caries Experience was measured using the Decayed, Missing, and Filled Teeth (DMFT) index. This index follows WHO (World Health Organization) criteria. It gives a total score of how much tooth decay a person has had. It counts teeth that have untreated decay, teeth lost because of decay, and teeth that have been fixed with fillings or other restorations.

Data Analysis

We entered all the collected data into IBM SPSS Statistics software, version 25.0, for analysis. We first calculated descriptive statistics. This helped summarize information about the teachers, like their age, and the results of their oral health exams. To see how oral health literacy related to the gingival index and DMFT scores, we used specific statistical tests. A p-value less than 0.05 was considered statistically significant. This means a result was unlikely to have happened by chance.

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READ-30 Assessment form

1. Sugar	_____	11. Abscess	_____	21. Periodontal	_____
2. Smoking	_____	12. Extraction	_____	22. Sealant	_____
3. Floss	_____	13. Denture	_____	23. Hypoplasia	_____
4. Brush	_____	14. Enamel	_____	24. Halitosis	_____
5. Pulp	_____	15. Dentition	_____	25. Analgesia	_____
6. Fluoride	_____	16. Plaque	_____	26. Cellulitis	_____
7. Braces	_____	17. Gingiva	_____	27. Fistula	_____
8. Genetics	_____	18. Malocclusion	_____	28. Temporomandibular	_____
9. Restoration	_____	19. Incipient	_____	29. Hyperemia	_____
10. Bruxism	_____	20. Caries	_____	30. Apicoectomy	_____

READ-30 Assessment form

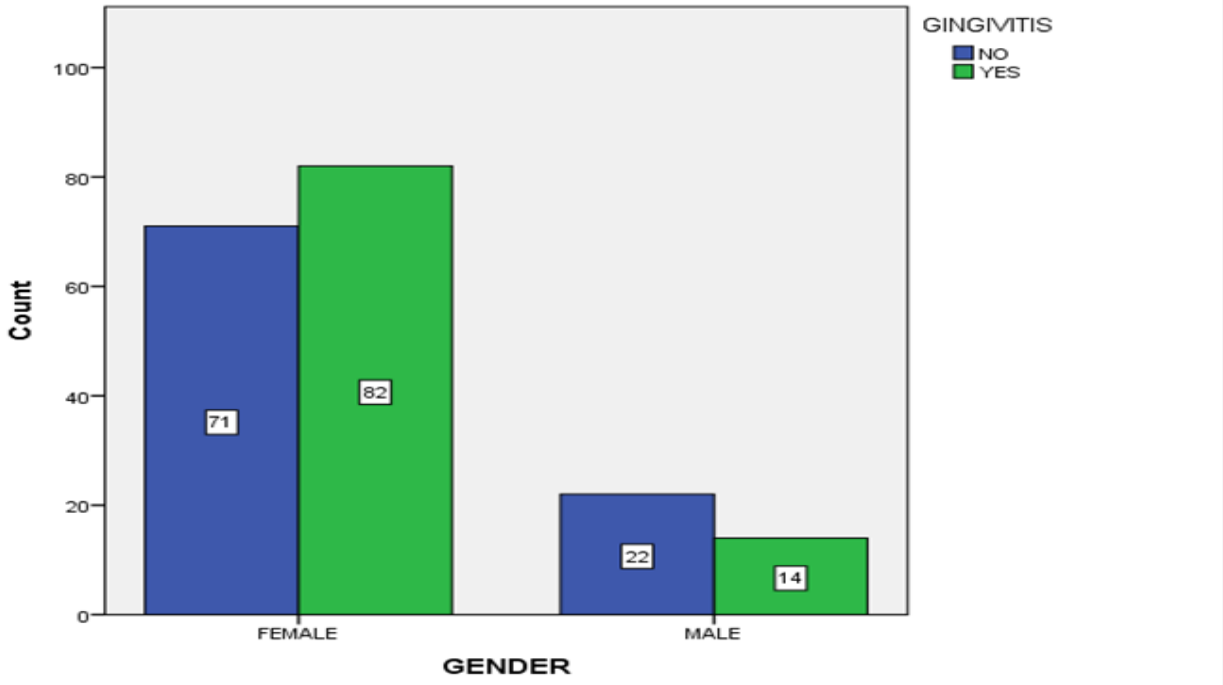

Figure 1: Figure showing the percentage distribution of gingivitis among gender among government school teacher

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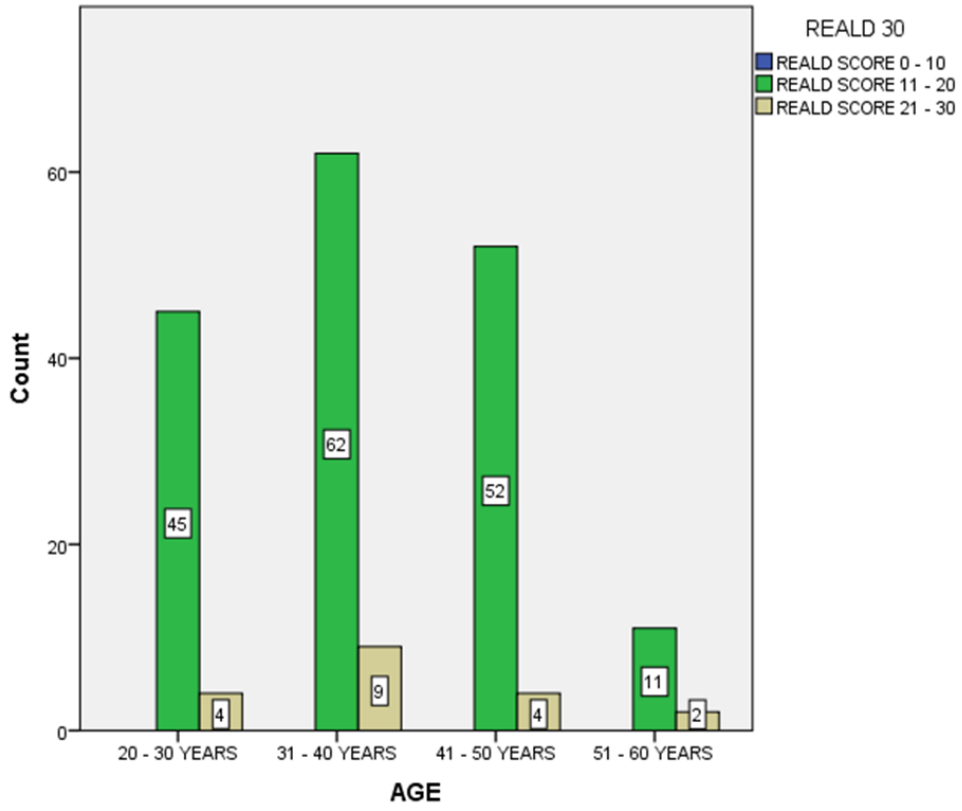

Figure 2 : Figure showing the percentage distribution of Reald30 scores among the age of the government school teachers

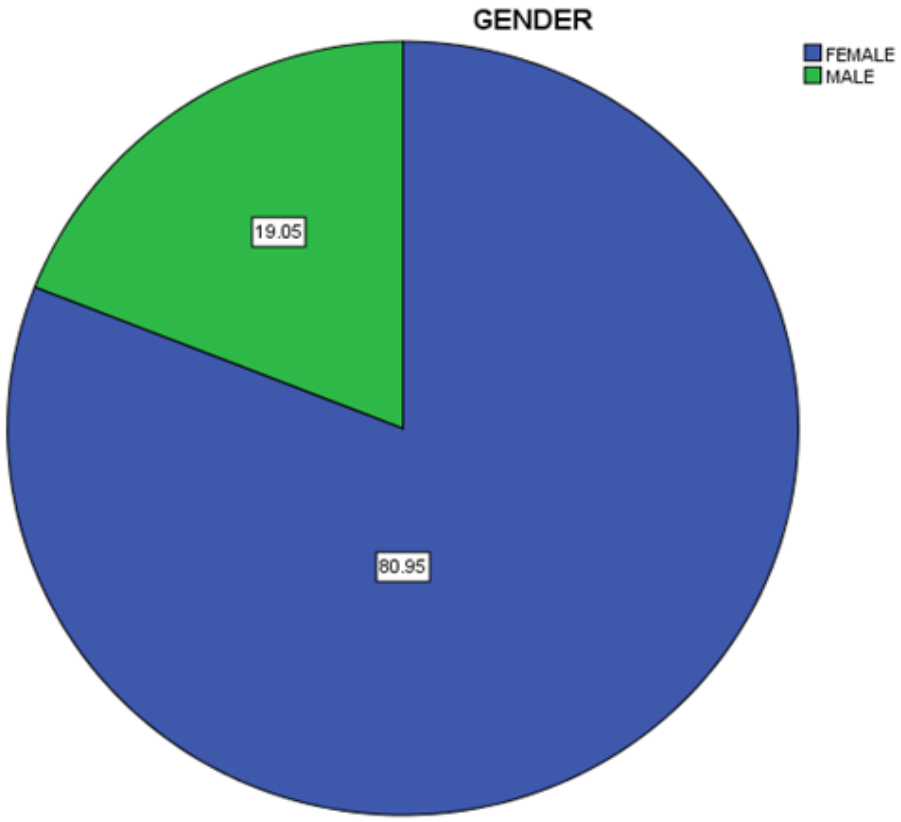

Figure 3: Pie Chart showing the percentage distribution of gender

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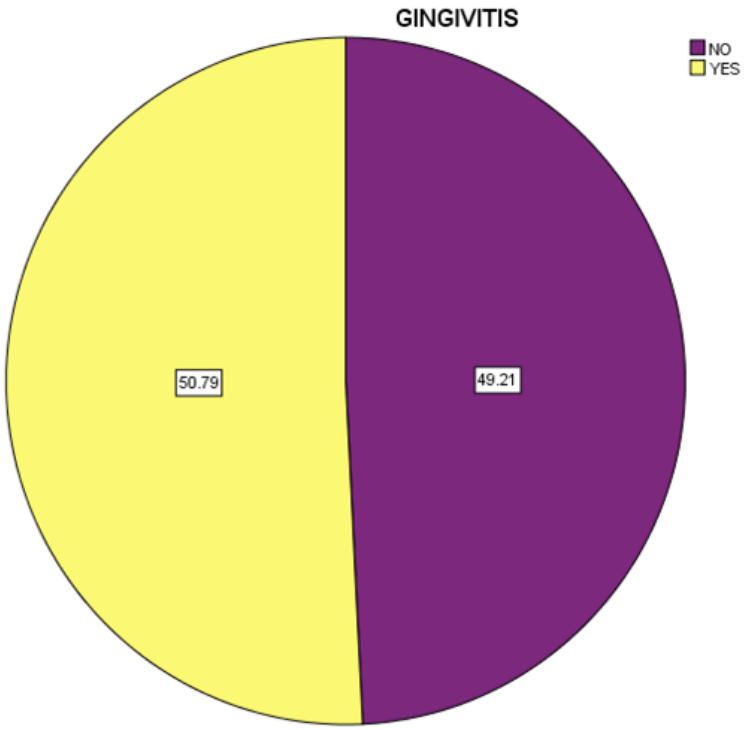

Figure 4: pie chart Showing the percentage distribution of gingivitis

From figure 1 bar chart shows percentage distribution of gingivitis among gender in government school teacher
From figure 2 bar chart shows the percentage distribution of Reald30 scores among the age of the government school teachers
From figure 3 Piechart showing the percentage distribution of gender in government school teachers
From figure 4 pie chart Showing the percentage distribution of gingivitis in government school teachers

Results

A total of 190 government school teachers participated in the study. The mean age of the participants was approximately 30 years, with the majority having completed postgraduate education in their respective disciplines. The following results summarize the findings from the oral health literacy assessment, gingival health evaluation, and dental caries experience analysis.

Oral Health Literacy (OHL)

Oral health literacy was assessed using the REALD-30 (Rapid Estimate of Adult Literacy in Dentistry), a validated word recognition test. Participants' scores were categorized into three levels:

- Inadequate literacy: 1–10
- Moderate literacy: 11–20
- Adequate literacy: 21–30

The distribution of scores showed that a substantial proportion of the teachers fell within the moderate to adequate oral health literacy categories. Few individuals exhibited inadequate literacy levels. Figure 2 illustrates the distribution of REALD-30 scores across different age groups, indicating a trend where younger and middle-aged participants tended to demonstrate higher literacy levels compared to their older counterparts.

Gingival Health Status

Gingival health was evaluated using the Silness and Löe Plaque Index, which grades the degree of gingival inflammation and plaque accumulation. A gender-based comparison (Figure 1) revealed notable differences in gingival health status between male and female teachers, with males showing a higher prevalence of gingivitis.
Figure 4 provides a pie chart summarizing the overall distribution of gingival health status among the study population, with a majority exhibiting mild to moderate gingival inflammation.

Dental Caries Experience

Dental caries experience was assessed using the DMFT index based on the World Health Organization (WHO) criteria. The results reflected a varied distribution of decayed, missing, and filled teeth across participants. While some participants

had low or zero caries scores, a significant subset displayed notable caries experience, particularly in terms of untreated decayed teeth.
Further statistical analysis to explore correlations between oral health literacy, gingival status, and DMFT scores was performed and is presented in the following section.

DISCUSSION:

The present cross-sectional study assessed oral health literacy (OHL) using the REALD-30 tool, along with gingival health and dental caries experience among government school teachers in Thiruvallur district. Our findings reveal that while a considerable number of teachers demonstrated moderate to adequate levels of OHL, there remains a notable proportion with inadequate literacy levels. These findings align with previous studies indicating that even educated individuals may lack sufficient health-specific literacy, particularly in oral health domains.
A study by Vann et al. (2010) emphasized the critical role of OHL in influencing oral health outcomes, particularly in populations responsible for the health education of others, such as teachers(10). Similarly, Kumar et al. (2016) conducted a study in South India which found that nearly 40% of school teachers had only moderate oral health literacy, and a considerable number were unaware of basic preventive oral care measures(4). Our results corroborate this trend, demonstrating the need for targeted oral health education programs within educational institutions.
The gender-based differences in gingival health observed in this study are consistent with findings by Petersen and Kwan (2011), who reported that female participants generally exhibited better oral hygiene and lower gingivitis levels compared to males(11). The possible explanation may be related to greater health awareness and self-care practices among female teachers, although sociocultural and behavioral factors may also play a role.
The prevalence of dental caries as indicated by the DMFT index also echoes the results of Sharda and Shetty (2008), who highlighted that even among professionals, dental caries remains a widespread concern due to poor oral hygiene practices and infrequent dental visits(12). However, the absence of detailed DMFT data in the current study limits direct quantitative comparison and underscores the need for more comprehensive future evaluations.
The use of the REALD-30 tool proved to be effective in assessing the literacy level of the participants. In agreement with our findings, Atchison et al. (2010) validated the utility of REALD-30 in diverse populations, suggesting that it is a reliable measure of word recognition related to dentistry and can serve as a proxy for understanding oral health concepts(13)
Furthermore, the demographic profile of our sample — predominantly postgraduate teachers — highlights a paradox often noted in health literacy research: high general literacy does not necessarily translate to high health literacy. This was also pointed out in the study by Naghibi Sistani et al. (2013), who found a weak correlation between education level and oral health literacy in Iranian adults(14)
Given that teachers are role models and information disseminators to children, their role in oral health promotion is significant (15). The findings of this study underscore the importance of integrating oral health training into teacher education curricula. Programs such as the WHO's Global School Health Initiative have long advocated for this integration, noting that schools provide a critical setting for promoting health literacy from an early age.

Limitations

Although the study provides important insights, it is not without limitations. The cross-sectional design limits causal interpretations, and the absence of detailed quantitative data on DMFT and REALD-30 score breakdowns restricts more granular analysis. Moreover, the study was geographically limited to Thiruvallur district and may not be generalizable to broader populations.

CONCLUSION:

This cross-sectional study provides valuable insights into the oral health literacy and oral health status of government school teachers in the Thiruvallur district. The findings revealed that while a significant proportion of the participants possessed moderate to adequate oral health literacy as measured by the REALD-30 tool, a concerning number still fell into the inadequate literacy category. This literacy gap has direct implications for the quality of oral health information these educators can pass on to students, highlighting the need for targeted oral health education initiatives within teacher training programs.
The assessment of gingival health using the Silness and Löe Plaque Index and dental caries experience through the DMFT index further reinforced the need for regular oral health screenings and preventive care, even among seemingly well-educated groups. Gender disparities in gingival health were observed, suggesting behavioral and awareness-related differences that merit further exploration.
Given the pivotal role teachers play in shaping children's health behaviors, enhancing their oral health literacy and knowledge is not only beneficial for their own well-being but also for the communities they serve. Integrating oral health modules into school-based health initiatives and continuing professional development for teachers could be an effective strategy for improving public oral health outcomes.
Ultimately, this study emphasizes the urgent need to bridge the gap between general education and health-specific literacy, particularly in professions that influence large segments of the population. Future research should explore longitudinal

impacts of such educational interventions and include more detailed assessments of clinical outcomes and behavioral practices.

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