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TOOTHACHE-RELATED SELF-CARE PRACTICES AND THEIR ASSOCIATION WITH ORAL HEALTH AND PROFESSIONAL CARE-SEEKING

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ABSTRACT

Background and Aim: This cross-sectional study aimed to investigate home-based methods used by individuals to manage toothache and to explore their associations with oral health and sociodemographic factors.

Materials and Methods: A total of 327 participants completed a structured questionnaire, and Decayed, Missing, and Filled Teeth (DMFT) scores were determined through clinical and radiographic examination. Descriptive statistics and comparative analyses (Chi-square and Fisher's Exact tests, $p < 0.05$) were performed.

Results: The most common self-care practices for toothache included self-medication with analgesics (72.0%), and home-based remedies, including saltwater rinses (55.8%), and herbal methods (65.2%); however, only 16.5% of participants perceived these methods as safe and effective. Education level was significantly associated with both the first response to toothache ($p = 0.021$) and DMFT index ($p = 0.004$). Moreover, education correlated positively with consulting online sources ($p < 0.001$) and health professionals ($p = 0.038$), while gender was associated with choosing pharmacist advice ($p = 0.007$).

Conclusions: Although home-based self-care practices for toothache are widespread, they provide only temporary relief and may delay appropriate endodontic care. Enhancing oral health literacy and promoting timely professional consultation could improve both endodontic and community oral health outcomes.

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INTRODUCTION

Despite significant advancements in the delivery of oral health services, dental pain remains one of the most commonly encountered clinical symptoms of oral diseases.[1] Numerous studies have consistently identified dental pain as one of the most frequent and decisive factors influencing individuals to seek dental care.[2, 3] A systematic review conducted by Pentapati et al.[4] reported that the global prevalence of dental pain ranges from 1.33% to 87.8%. Studies from India (40.4%), China (41.3%), and Iran (42.6%) included in that review highlight the notably high prevalence of dental pain in these countries[4]

When dental caries progress to involve the pulp, they frequently cause dental pain, which can occur irrespective of gender, age group, or geographical region. The presence of dental pain not only adversely affects quality of life but also underscores the importance of accurate diagnosis and timely treatment. However, individuals who face difficulties in accessing oral health services often avoid professional care, opting instead to manage their pain through various self-care practices or the unsupervised use of over-the-counter medications.[5] The primary reasons for this include the insufficient number of dental clinics and hospitals, difficulties in obtaining dental appointments, and the high cost of dental examinations.[6] Although such approaches may provide temporary relief of symptoms, they can contribute to the progression of the underlying pathology and an increased need for treatment.

Self-care practices, considered part of individual health management, encompass both the use of over-the-counter medications and non-pharmacological home-based methods, and represent a phenomenon widely observed on a global scale. This tendency is particularly associated with factors such as alleviating difficulties in accessing healthcare services, reducing long waiting times, facilitating easy access to non-prescription drugs, managing mild symptoms, and lowering costs—especially in developing countries. The adoption of self-care practices shows significant associations with demographic and sociocultural variables, including age, gender, educational level, and socioeconomic status.[7] Self-medication, an important component of self-care practices, is recognized as a widespread public health concern with a global prevalence that varies across regions. In Brazil, for instance, the high prevalence of over-the-counter drug use has been reported to result from intensive and uncontrolled promotional activities carried out without providing information on the potential side effects of the medications.[8]

In addition to pharmacological approaches, herbal-based treatments for dental pain have historically held an important place in many cultures. According to data from the World Health Organization, approximately 65–80% of the population living in rural areas of developing countries rely on medicinal plants to meet their primary healthcare needs.[9] Moreover, traditional medical practices have been reported to be rapidly gaining prevalence on a global scale.[10] In ancient medical literature, particularly in Ayurvedic sources, frequent references are made to the pain-relieving effects of various plants such as clove, olive, and turmeric in the management of dental pain.[11] Today, such plant-based agents are among the natural products that individuals can easily obtain or commonly keep at home for everyday use. In this context, turmeric, green tea, capsaicin, vanilla extract, saline mouth rinses, hydrogen peroxide, clove oil, peppermint oil, garlic, guava leaves, and thyme are among the most widely used supportive alternatives in the management of dental-related conditions.[12]

The aim of this study is to evaluate the methods individuals employ to manage dental pain at home and the perceived effectiveness of these methods, as well as to determine the relationship between the preferred approaches and individuals' oral health status through the Decayed, Missing, and Filled Teeth (DMFT) index, which represents the total number of decayed, missing, and filled teeth. In this context, the prevalence of self-care behaviors and their potential effects on oral health were examined from a comprehensive perspective.

MATERIAL AND METHODS

Ethical Approval

The study protocol was approved by the Non-Interventional Clinical Research Ethics Committee of Marmara University (Approval No: 27.03.2025/67). Institutional permission was obtained prior to data collection, and the study was conducted in accordance with the principles of the Declaration of Helsinki.

Study Design and Setting

This cross-sectional descriptive study was conducted at the Department of Endodontics, Faculty of Dentistry, Marmara University, between June 1 and July 1, 2025.

Study Population and Sample Size

The study population comprised patients who presented to the emergency dental clinic and student clinics of the Department of Endodontics during the study period. Considering the average monthly patient volume of approximately 1,000, the required sample size was calculated using Cochran's formula with a 95% confidence level, 5% margin of error, and an assumed proportion of p = 0.5, followed by finite population correction. The minimum required sample size was determined to be 278 participants; however, in order to increase the statistical power, the study aimed to include as many participants as possible.

Inclusion and Exclusion Criteria

Inclusion criteria:

- Being between 18 and 70 years of age
- Presenting to the emergency dental clinic or student clinic of the Department of Endodontics during the study period
- Having sufficient literacy to read and comprehend the questionnaire form
- Voluntarily agreeing to participate and signing the informed consent form

Exclusion criteria:

- Being younger than 18 or older than 70 years of age
- Having communication or cognitive impairments that prevent completion of the questionnaire
- Refusing to participate or not providing voluntary informed consent

Data Collection Instruments

Data were collected using a structured questionnaire consisting of 16 items, developed by the researchers based on a comprehensive review of the literature (Supplementary Material 1). However, due to inconsistencies identified during data screening, Question 8 was excluded from evaluation and not included in the statistical analyses. Specifically, a subset of participants selected methods as 'most effective' despite having indicated in previous questions that they had never used those methods, resulting in logical inconsistencies that could compromise the validity of the responses. The questionnaire items were inspired by the thematic structures and formats of similar studies in the existing literature focusing on home management of tooth pain and self-care methods. No direct translations or word-for-word quotations from any existing study were used. Instead, the questions were developed specifically for this study, drawing on the relevant content and focus areas of previous research, and were adapted to suit the cultural context, local patient profile, and study objectives.[13,14,15]

The questionnaire comprised the following sections:

- Demographic information (age, gender, educational level)
- Characteristics of tooth pain (frequency, intensity, duration)
- Home-based pain management methods used
- Perceived effectiveness and safety of these methods
- Sources of information on tooth pain management
- Use of herbal methods and potential side effects

In addition, each participant's oral health status was evaluated using the DMFT index, based on findings from routine clinical and radiographic examinations.

The content validity of the questionnaire was assessed by three academics specialized in endodontics. During this process, each item was reviewed in terms of language, clarity, content appropriateness, and alignment with the study objectives, and necessary modifications were made where required. No pilot study was conducted; the questionnaire was implemented directly during the data collection phase.

For the purposes of this study, self-care practices were defined as all non-professional approaches adopted by individuals to manage toothache prior to seeking dental care. Self-medication referred specifically to the use of over-the-counter analgesics or antibiotics without professional prescription. Home-based remedies included non-pharmacological methods applied at home, such as saltwater rinses. Herbal methods were considered a subcategory of home-based remedies and included the use of plant-derived substances such as clove, garlic, mint, and similar products. These terms were used consistently throughout the manuscript in accordance with these definitions.

Data Collection Process

After obtaining written informed consent from the participants, the questionnaire was administered by the same researcher through face-to-face interviews to ensure consistency in data collection. The completeness and accuracy of the questionnaire responses were verified, after which the DMFT index was recorded for each participant through routine clinical and radiographic examination performed in the Department of Endodontics. The presence of decayed, missing, and filled teeth was evaluated according

to WHO criteria, and all DMFT assessments were conducted by the same calibrated examiner to ensure scoring consistency. Findings were entered into the data sheet immediately after examination. All data were anonymized and stored in accordance with confidentiality principles.

The DMFT scores were categorized into four groups (low: 1–7, moderate: 8–12, high: 13–17, and very high: ≥18) to ensure balanced subgroup distribution and facilitate comparative analysis. These cut-off points were determined based on the data characteristics and the objectives of the present study.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 29.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics (frequency, percentage, mean, median, and standard deviation) were used to summarize the overall distribution of the data. Associations between categorical variables were evaluated using Pearson's Chi-square test or Fisher's Exact test, as appropriate. A p-value of <0.05 was considered statistically significant.

A total of 328 participants were included in the descriptive analysis. However, one participant with missing DMFT data was excluded from comparative analyses involving this variable (n = 327). For multi-response items, each response option was treated as an independent binary variable (selected vs. not selected), and associations were evaluated separately to minimize dependency-related bias.

RESULTS

The distribution of participants' responses to the survey questions, including sociodemographic characteristics and pain management behaviors, is summarized in Table 1.

A significant association was observed between education level and the first response taken during toothache episodes ($p = 0.021$), indicating that participants with higher education were more likely to visit a dentist initially. No significant relationships were found between gender ($p = 0.606$) or pain intensity ($p = 0.729$) and initial response behavior (Table 2).

Of the 327 participants, 121 (37%) were male and 206 (63%) were female. Both genders most frequently fell into the moderate DMFT category (8–12). Although females exhibited slightly higher proportions in the low (1–7) and very high (≥18) categories and males in the high (13–17) group, these differences were not statistically significant ($p = 0.513$) (Table 3).

A significant association was identified between education level and DMFT index ($p = 0.004$). Lower and moderate DMFT scores were more prevalent among university graduates, whereas higher and very high DMFT scores were more common in participants with lower education levels. Postgraduate participants showed the lowest prevalence of very high DMFT scores, suggesting that oral health status improves as education level increases (Table 3).

The use of home-based herbal methods for toothache management showed no significant association with DMFT groups ($p = 0.136$). Participants who reported using such methods tended to fall more frequently in the moderate DMFT group, indicating a non-significant trend toward better oral health among users of herbal methods (Table 4). Similarly, no significant associations were found between the use of herbal methods and gender ($p = 0.640$) or education level ($p = 0.758$). University graduates were the most frequent in both user and non-user groups.

Participants' perceptions of the safety and effectiveness of home-based remedies (Question 14) were not significantly associated with education level ($p = 0.538$), gender ($p = 0.791$), or DMFT index groups ($p = 0.264$). Although minor variations were observed — such as slightly higher DMFT values among those who partially or negatively evaluated home remedies — these differences were not statistically significant.

Regarding Question 15, which investigated participants' preferred sources of information for toothache management, significant associations were found between education level and both online sources ($p < 0.001$) and health professionals ($p = 0.038$), indicating greater reliance on these sources among participants with higher education. Gender was also significantly associated with selecting pharmacist recommendations ($p = 0.007$), with females showing a higher preference. No other significant associations were detected (Table 5).

DISCUSSION

This study was conducted to investigate the home-based methods individuals use to manage toothache, the perceived effectiveness of these methods, and their associations with sociodemographic and clinical variables such as gender, education level, and DMFT index. Toothache is a common condition during which individuals often avoid visiting a dentist, instead seeking relief through self-care practices, including self-medication and home-based remedies. Particularly in developing countries, factors such

Table 1. Sociodemographic and clinical characteristics of participants

Variable	Category	n (%) / Mean ± SD
Age (years)	**Mean ± SD**	**37.5 ± 0.7**
Gender (n=328)	Female / Male	207 (63.1%)/121 (36.9%)
	Primary school	71 (21.6%)
	High school	110 (33.5%)
Education level (n=328)	University	131 (39.9%)
	Postgraduate	16 (4.9%)
	Low (1-7)	83 (25.4%)
	Moderate (8-12)	100 (30.6%)
DMFT group (n=327)	High (13-17)	71 (21.7%)
	Very High (≥18)	73 (22.3%)
Toothache in the last 6 months (n=328)	Yes / No	265 (80.8%)/63 (19.2%)
	Every day	80 (30.2%)
	Every 2-3 days	48 (18.1%)
Pain frequency (n=265)	Once a week	52 (19.6%)
	Once a month	85 (32.1%)
	Mild	22 (8.3%)
Pain intensity (n=265)	Moderate	128 (48.3%)
	Severe	115 (43.4%)
	Visit dentist	95 (29.0%)
First action for toothache (n=328)	Self-medication (analgesic/antibiotic)	132 (40.2%)
	Other self-applied methods	101 (30.8%)
Perceived effectiveness of self-treatment (n=328)	Effective / Ineffective	147 (44.8%)/181 (55.2%)
	A few hours	214 (65.2%)
	A few days	45 (13.7%)
Duration of pain relief (n=328)	Completely resolved	13 (4.0%)
	No relief	56 (17.1%)
Adverse effects of non-medical methods (n=214)	Yes / No	9 (4.2%)/205 (95.8%)
	Safe/effective	54 (16.5%)
Perception of non-medical methods (n=328)	Partly safe/effective	169 (51.5%)
	Not safe/effective	105 (32.0%)

	Dentist/Health professional	250 (76.2%)
	Internet/Social media	61 (18.6%)
Most trusted source for toothache management (n=328)**	Friends/Family	15 (4.6%)
	Pharmacist	24 (7.3%)
	Other	2 (0.6%)
	Warm water rinse	15 (4.6%)
	Saltwater rinse	183 (55.8%)
	Alcohol-based mouthwash	20 (6.1%)
Home management methods used (n=328)**	Oral spray	58 (17.7%)
	Analgesic use	236 (72.0%)
	Cold compress	59 (18.0%)
	Hydrogen peroxide	1 (0.3%)
	Toothpaste or specific products	71 (21.6%)
Use of herbal methods (Q10)	Yes	214 (65.2%)
	No	114 (34.8%)
	Clove	186 (56.7%)
	Mint	22 (6.7%)
Materials Used in Home-Based Herbal Management of toothache** (Q11, n=214)	Garlic	34 (10.4%)
	Onion	6 (1.8%)
	Other	12 (3.7%)

*Herbal methods include clove, mint, or other plant-based preparations.
**Participants could select more than one option.
Note: Values are presented as n (%) unless otherwise indicated. One participant with missing DMFT data was excluded from analyses involving this variable (n = 327).
DMFT: Decayed, Missing, and Filled Teeth index.

as limited healthcare resources, time constraints, and the need for multiple treatment sessions have been reported to contribute to the continued prevalence of over-the-counter medication use and home-based practices.[15]

The observed inverse relationship between education level and DMFT scores highlights the well-established social gradient in oral health, whereby higher educational attainment is generally associated with better oral health outcomes. This finding aligns with the existing literature demonstrating a social gradient between educational attainment and oral health indicators. Moltubakk et al.[16] reported that the likelihood of having a higher DMFT score significantly increased as the level of education decreased. The higher DMFT values observed among individuals with lower education levels may be interpreted not only as a reflection of clinical factors but also as an indication of broader socioeconomic inequalities, limited health literacy, and restricted access to dental care services.

Higher educational attainment appears to shape healthcare-seeking behavior, with individuals being more inclined to prioritize professional dental care rather than relying on self-care or home-based approaches. In contrast, those with lower education levels tended to rely more on self-care practices or home-based remedies. This finding is

Table 2. Distribution of participants' first response for toothache management according to education level, gender, and reported pain intensity

Variable	Category	Visited dentist n (%)	Other n (%)	p-value*
Education level	Primary/High school (n=181)	43 (23.8%)	138 (76.2%)	0.021
	University/Postgraduate (n=147)	52 (35.4%)	95 (64.6%)	
Gender	Male (n=121)	33 (27.3%)	88 (72.7%)	0.606
	Female (n=207)	62 (30.0%)	145 (70.0%)	
Pain intensity	Mild/Moderate (n=150)	44 (29.3%)	106 (70.7%)	0.729
	Severe (n=115)	36 (31.3%)	79 (68.7%)	

*Pearson's Chi-square test. Bold values indicate statistical significance at $p < 0.05$.

Table 3. Distribution of Decayed, Missing, and Filled Teeth (DMFT) index groups according to gender and education level

Variable	Category	Low (1-7)	Moderate (8-12)	High (13-17)	Very High (≥18)	Total n (%)	p-value*
Gender	Male (n=121)	28 (23.1%)	38 (31.4%)	31 (25.6%)	24 (19.8%)	121 (100%)	0.513
	Female (n=206)	55 (26.7%)	62 (30.1%)	40 (19.4%)	49 (23.8%)	206 (100%)	
	Primary school (n=71)	10 (14.1%)	16 (22.5%)	17 (23.9%)	28 (39.4%)	71 (100%)	
Education level	High school (n=109)	28 (25.7%)	30 (27.5%)	28 (25.7%)	23 (21.1%)	109 (100%)	0.004
	University (n=131)	41 (31.3%)	48 (36.6%)	22 (16.8%)	20 (15.3%)	131 (100%)	
	Postgraduate (n=16)	4 (25.0%)	6 (37.5%)	4 (25.0%)	2 (12.5%)	16 (100%)	
Total (n = 327)	–	83 (25.4%)	100 (30.6%)	71 (21.7%)	73 (22.3%)	327 (100%)	

*Pearson's Chi-square test. Bold values indicate statistical significance at $p < 0.05$.
Note: DMFT groups were categorized as low (1–7), moderate (8–12), high (13–17), and very high (≥18) to ensure balanced subgroup distribution for analysis.

Table 4. Distribution of DMFT index groups according to the use of home-based herbal methods

Use of Herbal Methods	Low (1-7)	Moderate (8-12)	High (13-17)	Very High (≥18)	Total n (%)	p-value*
Yes (n=213)	54 (25.4%)	72 (33.8%)	47 (22.1%)	40 (18.8%)	213 (100%)	
No (n=114)	29 (25.4%)	28 (24.6%)	24 (21.1%)	33 (28.9%)	114 (100%)	0.136
Total (n=327)	83 (25.4%)	100 (30.6%)	71 (21.7%)	73 (22.3%)	327 (100%)	

*Pearson's Chi-square test.
Note: DMFT groups were categorized as low (1–7), moderate (8–12), high (13–17), and very high (≥18) to ensure balanced subgroup distribution for analysis.

consistent with previous studies emphasizing the pivotal role of education in shaping health-related behaviors.[17,18] Self-medication remains a commonly adopted initial coping strategy for toothache, reflecting persistent barriers to timely professional dental care in many settings. The extent of self-medication observed in different settings varies considerably across the literature. For instance, Bhattarai et al.[19] (2020) reported a self-medication rate of 62.6%,

Table 5. Associations between preferred sources for toothache management and sociodemographic/clinical variables

Variable	Option	p-value*
	Internet/Social media	0.028
	Dentist/Health professional	0.319
DMFT group	Family/Friends	0.773
	Pharmacist	0.261
	Other	0.707
	Internet/Social media	0.669
	Dentist/Health professional	0.666
Gender	Family/Friends	0.903
	Pharmacist	0.007
	Other	1.000
	Internet/Social media	<0.001
	Dentist/Health professional	0.038
Education level	Family/Friends	0.344
	Pharmacist	0.196
	Other	0.023

* Pearson's Chi-square test; Fisher's Exact test used where expected counts <5 (Education × Other).
Note: Q15 allowed multiple selections; percentages are calculated within each subgroup (row-wise). Bold indicates p<0.05.

Baig et al.[5] (2012) reported 57.3%, Kassie et al. [20] (2018) reported 35.9%, and Komal Raj et al.[21] (2015) reported 100%. This situation may be associated with differences in healthcare accessibility, economic conditions, and cultural beliefs. The findings indicate that self-medication remains a significant public health concern and suggest that this behavior is shaped by the combined influence of health literacy, socioeconomic circumstances, and cultural factors.

The literature regarding the influence of gender on self-medication behavior is inconsistent. Some studies have reported higher rates of self-medication among men, [22, 23, 24] whereas others have found this behavior to be more prevalent among women.[25] The absence of a clear gender-based pattern in initial pain-management behavior suggests that self-medication practices may be driven more by contextual and systemic factors than by gender alone. Improved access to healthcare services and the increasing tendency of women to seek professional consultation may have contributed to the reduction of this difference.

Beyond the prevalence of self-medication, the sources of information guiding this behavior are also of great importance. In a study conducted by Jamal et al.[14], pharmacists were reported as the most frequently consulted source of information (52.1%), followed by parents and relatives (35.3%), whereas dentists were consulted by only 11.5% of participants. Similarly, Bhattarai et al.[19] examined the sources of information related to patients' self-medication practices and reported that 42.8% relied on personal experience, 21.1% on relatives, 18.1% on pharmacists, and 13.9% on friends for advice. Komal Raj et al.[21] reported that pharmacists (40.6%) and relatives (23.4%) were the main sources of information, whereas the media and friends had comparatively less influence. In contrast to several previous reports, reliance on dentists and other healthcare professionals as primary information sources may indicate a growing awareness of the importance of professional guidance in oral health decision-making. This was followed by the use of online sources and advice from family or friends.

Educational attainment appears to play a key role in shaping both digital health information-seeking behaviors and trust in professional healthcare advice. This indicates that digital

health literacy and trust in professional guidance develop in parallel with educational attainment. Similarly, Bastani et al.[26] reported that individuals with higher education levels tend to approach online health information more critically and seek professional validation. Therefore, education level influences not only the means of accessing information but also the ability to evaluate its reliability.

Women may exhibit a more proactive approach to seeking accessible and trusted health information, with pharmacists serving as readily available healthcare intermediaries. Similarly, a study conducted in Germany reported that women regarded pharmacists as a significantly more important source of information compared with men.[27] Nevertheless, the pronounced tendency of women to seek pharmacists' advice indicates that the influence of gender roles and trust perception on health information–seeking behavior continues to persist.

The preference for easily accessible and low-cost pain-relief strategies underscores a tendency to prioritize rapid symptomatic relief over etiological treatment. The widespread use of saltwater and herbal applications reflects a continuing reliance on simple and low-cost home remedies within the community. However, although such approaches may provide temporary symptomatic relief, they can delay etiological treatment; therefore, the importance of professional dental evaluation should be emphasized.

Herbal methods continue to represent a widely adopted component of home-based toothache management in many communities. The most commonly used material was clove (56.7%), followed by garlic (10.4%), mint (6.7%), and onion (1.8%). The widespread use of clove may be attributed to its analgesic and antimicrobial properties derived from eugenol. However, such practices provide only temporary relief and cannot substitute for professional dental treatment.

The lack of a clear relationship between herbal method use and DMFT scores suggests that these practices are more likely employed for short-term symptom relief rather than for improving long-term oral health. The absence of significant differences by gender ($p = 0.640$) and education level ($p = 0.758$) indicates that these practices may represent a culturally widespread habit observed across the general population.

Despite their widespread use, confidence in the safety and effectiveness of home-based pain-relief methods appears to be limited. Similarly, Komal Raj et al.[21] reported that 18.3% of participants regarded such methods as effective, while Bhattarai et al.[19] found this proportion to be 31.3%. Compared with these reported rates, the lower perceived effectiveness observed in the present study suggests an increasing awareness among individuals that home-based methods do not provide lasting relief.

No significant associations were observed between participants' perceived safety and effectiveness of home-based pain relief methods and their education level ($p = 0.538$), gender ($p = 0.791$), or DMFT groups ($p = 0.264$). This finding suggests that perceptions regarding pain management may be independent of demographic factors.

This study has several limitations. First, due to its cross-sectional design, the relationships between variables should not be interpreted as causal, as the findings only reveal associations. Second, since the sample was drawn from a single institution, the generalizability of the results may be limited. Additionally, the psychometric properties of the questionnaire (e.g., construct validity and internal consistency) were not assessed. Finally, oral health status was evaluated solely using the DMFT index, without considering periodontal or soft tissue conditions. Future multicenter and longitudinal studies are recommended to validate and expand upon these findings.

CONCLUSIONS

This study demonstrated that a substantial proportion of individuals attempt to alleviate dental pain through self-care practices before seeking professional endodontic treatment. Although these methods may provide short-term relief, they cannot substitute for definitive endodontic management and were generally perceived as having limited effectiveness. Education level was found to be a key determinant of both oral health status and professional care-seeking behavior. These findings highlight the importance of early endodontic intervention, the need to dispel misconceptions regarding home-based pain control, and the potential value of improving oral health literacy to enhance clinical outcomes.

CONFLICT OF INTEREST STATEMENT

No potential conflict of interest relevant to this article was reported.

ETHICS STATEMENT

The study protocol was approved by the Non-Interventional Clinical Research Ethics Committee of Marmara University (Approval No: 27.03.2025/67).

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