

Original Research:

Knowledge, Attitude and Practice Among Private Dental Practitioners Towards Preventive Dental Measures of Pediatric Patients in Namakkal District: A Questionnaire Based Study

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Funding: None

Acknowledgments: NONE

Data Availability Statement: Not applicable

Conflicts of Interest: NONE

How to cite the paper: D Keerthika, Gawthaman M, Vinodh S, Manoharan M, Kamatchi M. Murali K. Knowledge, Attitude and Practice Among Private Dental Practitioners Towards Preventive Dental Measures of Pediatric Patients in Namakkal District: A Questionnaire Based Study. J Updates Pediatric Dent. 2024; 3(1): 13-21. <https://doi.org/10.54276/JUPD.2024.3104>.

Abstract

Aim: To assess the knowledge, attitudes, and practices of private dental practitioners in Namakkal District, Tamil Nadu, regarding preventive dental practice. **Material and Methods:** We conducted a descriptive cross-sectional survey using a 20-item closed-end questionnaire. We analyzed the data using Microsoft Excel and IBM SPSS Statistics version 25.0, employing statistical tests such as the frequency test, Mann-Whitney U test, and Spearman's rho correlation test. **Results:** A total of 200 dental professionals participated in the study, with 47.5% being male and 52.5% female. Of the participants, 68% were under the age of 35, while 32% were 35 years or older. Qualification distribution showed that 47.5% were dental graduates and 52.5% were dental specialists. We observed a highly significant difference in knowledge compared to attitude and practice. The mean \pm SD scores were 7.84 \pm 2.139 for knowledge, 3.11 \pm 0.955 for attitude, and 3.51 \pm 1.143 for practice. Statistically significant correlations were found between attitude and practice (0.246, $p < 0.0001$). **Conclusion:** Dental practitioners in Namakkal District, Tamil Nadu, demonstrated substantial knowledge and a positive attitude toward preventive dentistry, and they generally adopted preventive measures in their practice.

Keywords: Pediatric, preventive dentistry, knowledge, and attitude.

Submitted: 04.04.24; **Revised:** 06.05.24; **Accepted:** 31.05.24; **Published:** 30.06.24.

Introduction

Prevention at the primary level represents an early approach to disease management and holds significant value in dentistry, particularly pediatric dentistry. Employing preventive measures can help to avoid future complications, with the most common methods for preventing dental caries being oral health education, maintaining home hygiene, avoiding fermentable carbohydrates, consuming fluoridated water, and undergoing specific dental procedures. Key preventive practices include routine dental screenings, examinations, and the application of fluoride and sealants, all of which are essential in reducing the incidence of dental diseases.^[1,2] Dental caries is a local infection and complicated illness characterized by the interplay of several variables by host, agent, substrate, and time.^[3] The theory of dental caries is widely accepted. Miller's chemo parasitic theory explains that the bacteria present on the tooth surface produce acid, which demineralizes the tooth surface and further cavitates the tooth.^[4]

According to the World Health Organization (WHO), dental caries is a chronic non-communicable disease, particularly prevalent in children. Research indicates that 37% of children between the ages of 2 and 8 years suffer from dental caries in their primary teeth, while 79% of children between the ages of 2 and 19 years experience caries in their permanent teeth.^[5] Although there has been a slight decrease in the prevalence of caries in primary teeth, the incidence in permanent teeth remains high.^[6] In India, the prevalence of dental caries in children ranges from 40% to 60% among 5-year-olds and 40% to 80% among 12- to 15-year-olds.^[7] Fluoride plays a crucial role in preventive dentistry and is available in various forms, such as toothpastes, mouth rinses, gels, and varnishes.^[8] Professionally applied topical fluoride treatments are highly effective in reducing caries in children at moderate to high risk. Similarly, studies have shown that sealants reduce the incidence of serious lesions, especially on the occlusal surfaces of permanent molars.^[9] Carious lesions often develop in the pits and fissures of these molars due to their morphology, which facilitates plaque accumulation.^[10] When applied early, pit and fissure sealants create a mechanical barrier between enamel surfaces and biofilm, which stops bacteria from growing if they are kept in place properly.^[11] Additionally, space maintainers can help prevent premature loss of primary teeth, which can lead to arch length deficiencies and malocclusion. These devices help maintain the necessary arch length, width, and perimeter to ensure normal occlusion and prevent developmental issues.^[12] Dentists' knowledge and attitude towards oral healthcare provide effective preventive measures. Dentists serve as healthcare providers, educating patients about the importance of oral healthcare and the exponential growth of dental

science. Therefore, they must update their knowledge and practices to align with the best available scientific evidence for preventive measures.^[13] Dentists' treatment decisions are influenced by their knowledge and attitudes towards care options, which in turn influence their treatment decisions towards preventive care options.^[14] Therefore, we conducted this study to evaluate the dental practitioners in Namakkal district's knowledge, attitudes, and practices regarding pit and fissure sealants, topical fluorides, and the use of orthodontic appliances.

Materials and Methods

We conducted the present study among private dental practitioners in Namakkal District. The list of private dentists was obtained from the Indian Dental Association (IDA), Namakkal branch, which provided a database containing names, addresses, and phone numbers of registered dental practitioners. All identified dentists were contacted for participation in the study. Institutional ethical clearance was obtained prior to the study (VDCW/IEC/356/2023). Informed consent was secured from each participating dentist before commencing the study. A 20-item closed-ended questionnaire, adapted from Patil et al.,^[15] was used. The questionnaire was divided into several segments: the first segment collected demographic information such as gender, age, and qualifications; the second assessed the participants' knowledge levels regarding preventive dental care; the third evaluated their attitudes toward preventive dental care; and the final segment examined their practices related to preventive care. The questionnaires were formatted using Google Forms and distributed to the dentists via WhatsApp or email. The study excluded pediatric dentists and those who were unwilling to participate. Data were collected from the completed questionnaires provided by the practitioners.

Statistical Analysis

Study data were entered into Microsoft Excel and subsequently exported to IBM SPSS Statistics Version 25 for analysis. The frequency test was used to compare categorical variables in the demographic data. The Mann-Whitney U test was applied to compare knowledge, attitude, and practice scores with respect to age, gender, and qualification. Statistical significance was set at a p-value of 0.05 or less. Additionally, Spearman's rho correlation test was performed to determine the relationships between the mean scores of knowledge, attitude, and practice.

Results

A total of 200 practitioners were contacted, and all agreed to participate in the study. The questionnaire was divided into several segments: the first segment assessed the demographic profile of practitioners, including age, gender, and qualification, while the other segments evaluated knowledge, attitude, and practice. In this study, there were more female practitioners than male practitioners (Table 1). In terms of age, 68% of participants were under 35 years of age, and 32% were 35 years of age or older (Table 2). In terms of qualification, 52.5% were BDS (Bachelor of Dental Surgery) graduates and 47.5% were MDS (Master of Dental Surgery) graduates (Table 3). Table 4 presents the distribution of scores for each question

across the three sections—knowledge, attitude, and practice. The overall mean scores for knowledge, attitude, and practice were 7.84 ± 2.139 , 3.11 ± 0.955 , and 3.51 ± 1.143 , respectively (Table 5). Table 6 reveals significant differences in knowledge and attitude between male and female participants in the gender distribution. Among qualifications, MDS practitioners demonstrated significantly higher knowledge regarding preventive measures compared to BDS practitioners ($p = 0.028$) (Table 7). A comparison of knowledge related to age distribution revealed significant differences in mean values between practitioners younger than 35 years and those 35 years or older ($p = 0.003$) (Table 8).

Gender	Frequency	Percent
Male	95	47.5
Female	105	52.5
Total	200	100.0

Table 1: Gender wise – frequency distribution of the study population

Age group	Frequency	Percent
Below 35 years	136	68.0
Above 35 years	64	32.0
Total	200	100.0

Table 2 : According to age - Frequency distribution of the study population

Qualification	Frequency	Percent
BDS	105	52.5
MDS	95	47.5
Total	200	100.0

Table 3: Based on qualification – frequency distribution of the study population

Question	Yes(%)	No(%)
1. Do you know about use of pit and fissure sealant in children?	100	0
2. Do you know various contraindications for use of pit and fissure sealants?	83.0	17.0
3. Do you know about various commercially available pit and fissure sealant products?	53.5	46.5
4. Can sealant be placed on teeth immediately following a topical fluoride treatment?	33	67
5. Do you know about various age groups of topical fluoride application?	70	30
6. Do you know about use of topical fluorides?	80.5	19.5
7. Do you know about management of fluoride toxicity?	54	46
8. Do you know about various commercially available topical fluorides products?	58	42
9. Do you know about usage of space maintainer?	80.5	19.5
10. Do you know about various contraindications for use of space maintainer?	71.5	28.5
11. Do you know about various abnormal oral habits in children?	97.5	2.5
12. Do you evaluate clinical success rate in Follow-up visits after pit and fissure sealants?	56.5	43.5
13. Do you educate your patients and their Parents about importance of fluoride?	85	15
14. Do you examine for different oral habits in children?	83.5	16.5
15. Do you refer your patients to pediatric dentist?	85	15
16. Do you give habit breaking appliances to children when indicated?	75.5	24.5
17. Do you give space maintainer after extraction when indicated?	75.5	24.5
18. Do you give myofunctional appliances in your routine dental practice, when indicated?	39.5	60.5
19. Do you use topical fluoride in your routine dental practice?	82	18
20. Do you use pit and fissure sealants in your routine dental practice?	81	19

Table 4: Distribution of score percentage for each question in three sections -Test used by Frequency distribution.



	N	Minimum	Maximum	Mean	Std. Deviation
Knowledge score	200	3	11	7.84	2.139
Attitude score	200	0	4	3.11	0.955
Practice score	200	1	5	3.51	1.143

*Significance

Table 5: Overall mean and standard deviation values of knowledge, attitude and practice score.

	Sex	N	Mean	Std. Deviation	P -value
Knowledge score	Male	95	7.15	2.292	0.000*
	Female	105	8.47	1.782	
Attitude score	Male	95	3.26	.841	0.055*
	Female	105	2.97	1.033	
Practice score	Male	95	3.54	1.137	0.721
	Female	105	3.49	1.153	

*Significance

Table 6: Comparison of mean knowledge, Attitude and practice score with Gender.

	Qualification	N	Mean	Std. Deviation	P -value
Knowledge score	BDS	105	7.54	2.057	0.028*
	MDS	95	8.17	2.191	
Attitude score	BDS	105	3.16	0.774	0.786
	MDS	95	3.05	1.124	
Practice score	BDS	105	3.38	1.163	0.088
	MDS	95	3.65	1.109	

**

*Significance

Table 7: Comparison of mean knowledge, Attitude and practice score with Qualification of practitioners.

The correlations between knowledge, attitude and practice are present in which (Table 9) shows that

Statistically significant correlation were found between attitude and practice (p value = 0.000).

	Age groups	N	Mean	Std. Deviation	P -value
Knowledge score	25- 35 years	136	7.58	1.876	0.003*
	36 - 45 years	64	8.39	2.542	
Attitude score	25- 35 years	136	3.07	1.013	0.602
	36 - 45 years	64	3.20	0.820	
Practice score	25- 35 years	136	3.49	1.186	0.933
	36 - 45 years	64	3.55	1.053	

*Significance

Table 8: Comparison of mean Knowledge, Attitude and Practice score with age practitioners.

Discussion

Preventive dental care is fundamental to pediatric dentistry and crucial for promoting oral health and

preventing dental diseases in children. Despite its recognized importance, the implementation of preventive measures by practitioners varies due to different factors such as knowledge, attitudes, and

practice patterns. The principle that "prevention is better than cure" is particularly applicable to preventive dental care.^[16] Preventive dentistry is a crucial strategy

for reducing the incidence of dental diseases and promoting positive oral health. It helps prevent

Test	Scores		Knowledge score	Attitude score	Practice score
Spearman's rho	Knowledge score	Correlation Coefficient	1.000	0.057	0.137
		P – value	.	0.425	0.054
		N	200	200	200
	Attitude score	Correlation Coefficient	0.057	1.000	0.246**
		P – value	0.425	.	0.000
		N	200	200	200
	Practice score	Correlation Coefficient	0.137	0.246**	1.000
		P – value	0.054	0.000	.
		N	200	200	200

**** Significance**

Table 9: Correlation between knowledge, attitude, and practice with Spearman rho test.

Discussion

Preventive dental care is fundamental to pediatric dentistry and crucial for promoting oral health and preventing dental diseases in children. Despite its recognized importance, the implementation of preventive measures by practitioners varies due to different factors such as knowledge, attitudes, and practice patterns. The principle that "prevention is better than cure" is particularly applicable to preventive dental care.^[16] Preventive dentistry is a crucial strategy for reducing the incidence of dental diseases and promoting positive oral health. It helps prevent complications such as dental caries, malposition, and malocclusion of teeth. Early screening, diagnosis, and treatment planning can mitigate dental caries, a global oral health issue that is prevalent worldwide.^[17,18] According to the American Dental Association (ADA), preventive clinical measures like sealants, topical fluorides, and other preventive practices should align

with the needs and preferences of both practitioners and patients. Sealants and fluorides are among the most effective methods for preventing the initiation and progression of dental caries. Despite good knowledge and favorable attitudes towards these measures, research indicates that they are often underutilized in clinical practice.^[19,20]

Oral health promotion is a successful approach for reducing disease burden and enhancing quality of life. Dentists play a pivotal role in educating the community about preventive measures and maintaining balanced oral health. Thus, dentists' awareness and understanding are essential for implementing preventive dental procedures effectively.^[20] Dental practitioners' attitude towards preventive dentistry significantly influences their decision-making and can motivate patients to receive preventive care.^[22] This study utilized a self-reported, closed-ended questionnaire focusing on preventive measures such as

pit and fissure sealants, fluoride application, and space maintainers. The study was conducted in Namakkal District, Tamil Nadu, due to the lack of literature and data on the knowledge, attitudes, and practices regarding preventive dental measures in this region. A prevalidated questionnaire by Patil et al.^[15] was used. Although the questions were dichotomous, they comprehensively covered common preventive measures in dental practice. The overall response rate among dental professionals in and around Namakkal District was satisfactory. Pediatric dentists were excluded to avoid bias, as they specialize in preventive care for pediatric patients. The first segment of the questionnaire gathered demographic details such as gender, qualification, and age group of the practitioners.^[23]

In this study, 200 private dental practitioners participated. Of these, 136 (68%) were under 35 years of age, and 64 (32%) were 35 years or older. By qualification, 105 (52.5%) were BDS-qualified practitioners, and 95 (47.5%) were MDS-qualified practitioners. Female practitioners (105, or 52.5%) outnumbered male practitioners (95, or 47.5%). The questionnaire's other segments assessed knowledge, attitude, and practice related to preventive dental care. Female practitioners had a higher mean knowledge score, whereas male practitioners had a higher mean score for attitude and practice. This contrasts with findings by Tiwari et al., which reported higher knowledge, attitude, and practice among female practitioners in Durga Bhilai city. The discrepancy might be due to differences in gender ratios between the studies.^[24] Regarding qualifications, MDS practitioners demonstrated greater knowledge and practice compared to BDS practitioners, with insignificant differences in attitude. This is consistent with findings by Patil et al.^[15] likely due to MDS practitioners' greater academic and clinical exposure. Practitioners older than 35 years demonstrated greater knowledge, attitude, and practice in preventive dental care than those younger than 35. This result may be attributed to the additional experience and skills acquired over years of clinical practice. This finding contrasts with Patil et al potentially due to differences in study timelines.^[15]

Overall, the results indicate favorable knowledge, positive attitudes, and good practices regarding preventive measures such as pit and fissure sealants, topical fluoride, and space maintainers among dental practitioners in Namakkal District, Tamil Nadu. However, only the knowledge and attitude data align with Tiwari et al.'s study, while practices showed contradictory results. Differences in patient compliance, parental attitudes, and awareness may account for these discrepancies.^[24] The limitations of this study include the use of dichotomous questions, which may not fully capture practitioners' views on

preventive dental care, and an uneven sample size distribution. Future studies should address these limitations and adopt a broader perspective to gain more comprehensive insights.

Conclusions:

Based on the observations of the present study:

- Female participants, MDS-qualified practitioners, and those above the age of 35 demonstrated significantly higher levels of knowledge.
- Male practitioners and those over 35 years of age exhibited a significantly more positive attitude, with a less noticeable increase among BDS-qualified practitioners.
- Preventive dental care practices were more prevalent among male practitioners, MDS-qualified practitioners, and those above 35 years of age, though the differences were not statistically significant.
- Participants with a positive attitude showed increased preventive practices, indicating a significant correlation between attitude and practice.

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QUESTIONNAIRE

Knowledge:

1. Do you know about use of pit and fissure sealant in children?
2. Do you know various contraindications for use of pit and fissure sealants?
3. Do you know about various commercially available pit and fissure sealant products?
4. Can sealant be placed on teeth immediately following a topical fluoride treatment?
5. Do you know about various age groups of topical fluoride application?
6. Do you know about use of topical fluorides?
7. Do you know about management of fluoride toxicity?
8. Do you know about various commercially available topical fluorides products?
9. Do you know about usage of space maintainer?
10. Do you know about various contraindications for use of space maintainer?
11. Do you know about various abnormal oral habits in children?

Attitude:

12. Do you evaluate clinical success rate in Follow-up visits after pit and fissure sealants?
13. Do you educate your patients and their Parents about importance of fluoride?
14. Do you examine for different oral habits in children?
15. Do you refer your patients to paediatric dentist?

Practice:

16. Do you give habit breaking appliances to children when indicated?
17. Do you give space maintainer after extraction when indicated?
18. Do you give myofunctional appliances in your routine dental practice, when indicated?
19. Do you use topical fluoride in your routine dental practice?
20. Do you use pit and fissure sealants in your routine dental practice?