



Knowledge and Attitude of Basic Orthodontics among General Dentists and Non-Orthodontic Postgraduates in South India – A Cross-Sectional Questionnaire Based Survey

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ABSTRACT:

Aim: The aim of the present study was to assess the knowledge and attitudes of general dentists and non-orthodontic postgraduates towards orthodontics.

Background: Early detection of malocclusion is crucial for motivating patients to seek orthodontic intervention before long-term complications arise. The increasing prevalence of malocclusion and the growing demand for orthodontic treatment among young populations can be attributed to factors such as increased awareness of dental health and aesthetics, as well as advancements in orthodontic techniques and technologies.

Methods: A Google Form with a questionnaire was created for general dentists and non-orthodontic postgraduates to respond to statements regarding their perception towards orthodontics. This questionnaire consisted of three sections. The first section collected demographic details and educational levels of the participants. The remaining two sections consisted of 28 multiple-choice closed-ended questions designed to evaluate the knowledge and attitudes of participants towards orthodontics.

Results: A total of 310 participants responded to the questionnaire. The comparative analysis showed a highly significant difference in knowledge and attitude scores between general dentists and non-orthodontic postgraduates. No significant correlations were observed, except for the specialty and qualification related to orthodontic knowledge.

Conclusion: The study highlights the need for better knowledge of orthodontic treatment among general dentists and non-orthodontic postgraduates. The results of the study were moderately satisfactory, indicating the need for increased clinically oriented education on the practice and concepts of orthodontic treatment.

KEYWORDS: Knowledge, Attitude, Basic Orthodontics, General Dentists, Postgraduates

I. INTRODUCTION

Orthodontics is the study of the growth and development of the jaws and face, particularly, and the body generally, as influencing the position of the teeth. It also involves the study of the action and response of internal and external influences on development, as well as the prevention and correction of arrested and perverted development [1]. Oral health generally has an effect on the general health of an individual and eventually affects well-being, education, and development [2].

Malocclusion is the second most common dental complaint after dental caries in children and young adults [3]. It can lead to difficulty in functional movements of the mandible, speech, mastication, swallowing, increased susceptibility to trauma, and periodontal problems. Orthodontics is the treatment option that addresses all these issues. The patient's decision to prefer orthodontic therapy is based on several factors, with aesthetic concerns being the most prominent reason.

In recent years, an increasing number of adult patients are seeking orthodontic therapy. The role of general practitioners and non-orthodontic specialists in timely identification of malocclusion, recording the findings, discussing with specialists, and arriving at a treatment plan is of paramount importance [4].

Although orthodontic treatment is generally provided by orthodontists, general dentists are frequently involved in the assessment and referral of patients for orthodontic treatment. However, the level of knowledge and attitude towards orthodontics among general dentists and non-orthodontic specialists has not been considerably studied.

II. MATERIALS AND METHODS

Study Design:

A Google Form was created for general dentists and non-orthodontic postgraduates to respond to questions regarding orthodontic treatment. The study was carried out from March



16, 2023, to March 28, 2023, during which the questionnaire was distributed. The Content Validity Index (CVI) was calculated with a panel of 5 expert orthodontists and it was found to be 0.98. The questionnaire was altered based on their feedback, and final variations were made according to the assessment.

Sample Size:

A descriptive cross-sectional study was conducted on 310 dentists who participated from different areas of Tamil Nadu, Karnataka, Kerala, Maharashtra, and Andhra Pradesh to study their knowledge and attitudes of the basics of orthodontic therapy. The sample size was calculated using the estimated correlation coefficient, and the minimum sample size needed was 85.

Questionnaire Design:

The study was conducted using a questionnaire containing 28 questions, as illustrated in Table 1. There were 19 questions assessing knowledge and 9 attitude questions.

First Section:

Designed to collect demographic details, years of experience, and the location of their work.

Second Section:

Survey for the knowledge of orthodontic practice:

In total, 19 queries were asked to gauge the information of general dental practitioners and non-orthodontic postgraduates. The questions included suitable age for orthodontic treatment, the need for functional appliances, the influence of aberrant habits, diagnosis of malocclusion, and instructions for retainers and other orthodontic appliances.

Survey to consider attitudes toward orthodontic practice:

There were 9 questions asked to evaluate the participants' attitudes towards orthodontic treatment. These questions covered topics such as orthodontic treatment in patients with midline diastema, airway restrictions, weak periodontium, and TMJ complaints.

Statistical Analysis:

Descriptive statistics were used to analyze the data, expressing mean scores and standard deviation. Scores were calculated based on the responses given by participants, and individual scores were summed up. The distribution of participants according to gender is shown in Graph 1, with a higher participation of females.

Based on gender, females showed more interest than males, with 65.8% of responses (Graph 1). In the knowledge section, the highest percentage of correct responses was for question 8, which stated that mouth breathing can be diagnosed, with 83%. The lowest percentage of correct responses was for question 11, which asked about the teeth most prone to root resorption during orthodontic treatment, with 81% (Figure 1).

Within the attitude section, most of the participants reported that they look for malocclusions during clinical examination (question 26) and educate patients about oral hygiene procedures during orthodontic treatment (question 27). Additionally, a majority of participants believed that diastema closure treatment requires composite restoration rather than orthodontic treatment (question 28) (Figure 2).

The correlation of knowledge scores varied with the qualification and specialty of the participants, as shown in Table 2.

Table.1. Sections of the questionnaires

Section 1 - Demographic details:
Email:
Age:
Gender:
Qualification:
Specialist:
Year of Experience:



Area of region:
Section 2 – Knowledge and Attitude
Knowledge questions:
1. What age should be a child's first visit to an orthodontist
2. Early orthodontic treatment involves correction of either A) Skeletal Correction B) Dental Correction C) Bite Correction D) Crowding correction E) Airway problems correction
3. Orthodontics treatment gives A) Structural balance B) Functional Efficiency C) Aesthetic Harmony D) Equilibrium effect
4. Patient with bad oral habit (Thumb sucking, Tongue thrusting, Mouth breathing) should
5. What is interceptive orthodontics
6. Patients presents with the anterior open bite, proclined upper incisor, retroclined lower incisor, narrow maxillary arch palate, what could be the etiology.
7. Functional appliance will be most effective when given in
8. Mouth breathing can be diagnosed by
9. What are the essential diagnostic record take for orthodontic procedure?
10. How long will you ask patient to wear retainer after post orthodontic treatment
11. Which teeth is more prone for root resorption during orthodontic treatment
12. Are you familiar about myofunctional therapy, if yes mention any 2 therapy
13. Are you aware of Iatrogenic effects in orthodontic treatment, if yes mention any 2?
14. Do you think that mini screws can replace molars as anchorage
15. In addition to dental issues. Does patients facial profile decide the treatment plan whether extraction or non-extraction?
16. Do you think medications influence orthodontic tooth movement
17. Can edentulous space of missing Molars be treated with orthodontics
18. Do you think swallowing pattern of an individual influence malocclusion
19. Can orthodontic treatment aid in prosthetic Implant movement
Attitude Questions:
20. For patients with TMJ disorder, do you prefer orthodontic treatment
21. What is your preference for management of restricted airway
22. Do you prefer orthodontic treatment for periodontally compromised patients
23. Do you think orthodontic treatment outcomes affect the patients Self – esteem



24.	Do you think his/her problem will worsen, if patient discontinues the orthodontic treatment
25.	Do you prefer orthodontic treatment for adult patients (above 35 years)
26.	Do you think you should look for malocclusions on clinical examination when patients report with any other complaint
27.	Do you educate orthodontic patients about oral hygiene procedures
28.	For diastema closure what treatment will you prefer

Graph 1

Distribution of participants according to gender

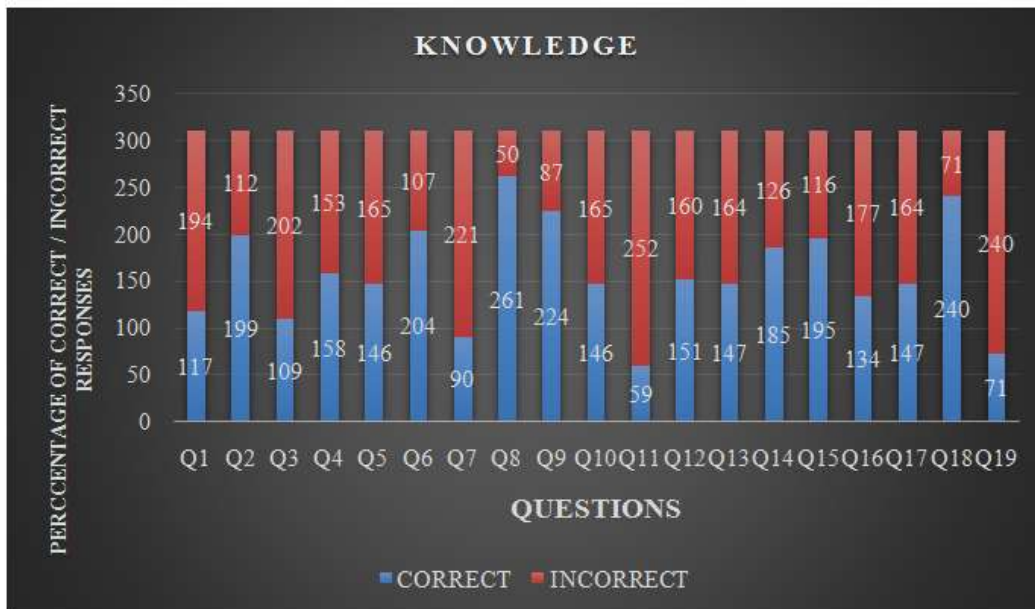
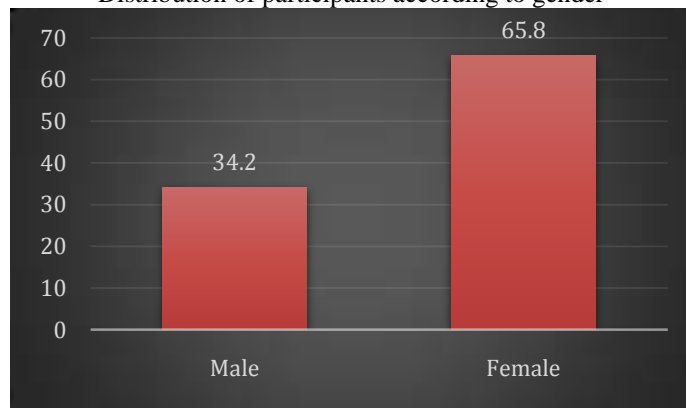


Figure 1: Responses to questions related to the knowledge about basic orthodontics showed that the highest positive responses were associated with question 8. The lowest number of positive responses were associated with question 11.

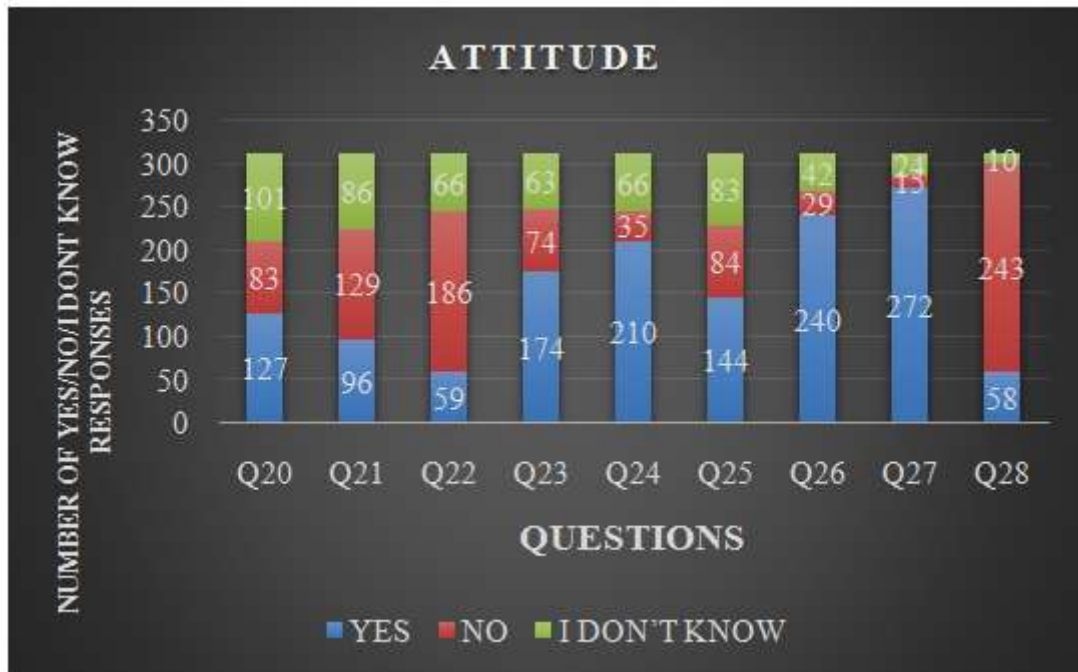


Figure 2: Responses to questions related to the attitude about basic orthodontics has been shown.

Table 2

Correlation between overall knowledge score and various demographic variables.

Variable	Correlation coefficient	P value
Age	0.031	0.582
Gender	0.067	0.237
Qualification	-0.026	0.647
Specialty	-0.006	0.915
Years of experience	0.147	0.009

II. DISCUSSION

Ancient Greek and Roman civilizations also made efforts to improve dental alignment. The philosopher Hippocrates and the physician Aulus Cornelius Celsus both described methods of tooth eruption guidance, suggesting early awareness of orthodontic principles. The field of orthodontics as we know it today began to emerge in the late 19th and early 20th centuries. Pioneers such as Edward H. Angle, considered the father of modern orthodontics, introduced systematic approaches and principles that laid the foundation for contemporary orthodontic practices. [10] Malocclusion is indeed one of the most common oral pathologies and is ranked as the third most significant public health dental disease globally, following dental caries and periodontal disease. [6] Malocclusion is a term that defines the deviations from the ideal occlusal relationship. [8] In India, the frequency of malocclusion varies from 20% to 43%. [2] Given the prevalence and potential consequences of malocclusion, it is crucial to promote early

detection, raise awareness, and provide timely orthodontic intervention and treatment options. Orthodontic correction can help alleviate functional, aesthetic, and oral health issues associated with malocclusion, improving the quality of life for affected individuals. [9] The most important causes for the development of malocclusion are environmental, genetic, systemic causes, and harmful oral habits. Malocclusion has been delinquently affecting our individuality for many years and people's perception about its ill effects fluctuates from place to place. [6]

The study's findings indicated that females exhibited a more positive attitude than males towards the treatment of malocclusion. Additionally, females were found to place greater importance on aesthetics in relation to orthodontic treatment. These results are consistent with a previous study conducted by Muhanad L. and colleagues in 2020 [12]. There was a significant correlation between specialty and qualification with knowledge about orthodontics, indicating that



participants' level of knowledge varied based on their specialty and qualifications in dentistry.

According to the American Association of Orthodontists, it is recommended that a child's first visit to an orthodontist should occur at the age of 7. However, 62% of the participants were not aware of the recommended age for a child's initial orthodontic consultation. Additionally, only 50% of participants believed that children with abnormal oral habits should consult with an orthodontist for early treatment. These findings align with studies conducted by Muralidhar and Brkanović S et al. [2,4]. Early diagnosis of skeletal malocclusion and the use of growth modification appliances can have significant benefits, such as altering a child's facial profile and potentially avoiding the need for orthognathic surgery in the future. However, the study indicates that a considerable portion (around 51%) of the participants were not familiar with myofunctional therapy and the appropriate age at which functional appliances should be introduced. Furthermore, 59% of participants believed that mini screws can replace molars for anchorage, while 41% were unaware of miniscrews [2,13].

Regarding knowledge about orthodontic treatment, 50% of dentists were not aware that medications can influence orthodontic tooth movement, and they were also unfamiliar with the iatrogenic effects that can occur during orthodontic treatment. Additionally, 54% of participants were not aware that the type and duration of retainer wear depend on the type of malocclusion [2,4].

Based on the participants' attitudes, 60% believed that orthodontic treatment cannot be preferred for periodontally compromised patients or patients aged above 35 [4,13]. However, 77% of participants believed that malocclusion should be clinically examined when a patient reports with any other complaint [2,13]. Most of the dentists reported educating their orthodontic patients about oral hygiene procedures and preferred orthodontic treatment for TMJ disorders. However, 78% of participants indicated a preference for conservative treatment rather than orthodontic treatment for midline diastema.

III. CONCLUSION:

The current study has shown that most of the respondents have the information about orthodontics, but with varying degrees. Results of this study were relatively satisfactory, and it showed the need for increased clinically oriented education of practice and concepts of orthodontic treatment. Therefore, efforts should be made to improve the knowledge of orthodontics among non-orthodontic dental practitioners, while

maintaining a positive attitude towards the specialty. This will enable general dentists to identify and refer patients who require orthodontic treatment and provide better comprehensive care.

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Conflicts of interest

There are no conflicts of interest

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