

Awareness, Perceptions, and Barriers Related to Orthodontic Treatment: A Cross-Sectional Survey in the Indian Population

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ABSTRACT

Introduction: Orthodontic treatment plays a crucial role in correcting malocclusion and improving oral function, aesthetics, and quality of life. Despite advances in orthodontics, a gap persists between the availability of treatment and its uptake, particularly in developing countries like India. Limited awareness, misconceptions, and perceived barriers often delay or prevent individuals from seeking timely care. The present cross-sectional study aimed to assess the awareness, perceptions, motivations, and barriers related to orthodontic treatment among a diverse Indian population and examine their associations with age and gender.

Materials and Methods: A questionnaire-based survey was conducted among 365 participants aged 12 years and above. The survey was administered electronically through social media platforms using a structured Google Form. The questionnaire included demographic information, general awareness, treatment motivations, knowledge and misconceptions, and barriers to orthodontic care. Responses were analyzed using descriptive statistics and Chi-square tests to assess associations with age groups and gender, using SPSS v26.0.

Results: Most respondents were aware of orthodontic treatment (87.7%) and recognized its esthetic and functional benefits. However, detailed knowledge, such as correct treatment timing and scope, varied significantly with age ($p < 0.05$) but not gender. Aesthetic concerns were the primary motivation (28%), while functional reasons were less cited. The most common barriers were lack of perceived need (33.4%), time constraints (16.7%), and social discomfort with braces (14%). Social acceptance was a more frequent concern among females ($p = 0.045$) and younger age groups.

Conclusion: While general awareness of orthodontics is high, detailed knowledge remains inconsistent, and misconceptions persist. Age influences both awareness and perceived need, suggesting that age-targeted educational strategies, especially among youth, are essential to improve orthodontic literacy and access.

Keywords: Orthodontic awareness; Public perceptions; Treatment barriers; Malocclusion; Patient education.

1. INTRODUCTION

Malocclusion is a prevalent oral health condition that affects individuals across all age groups, often leading to both functional limitations and esthetic concerns.[1,2] Orthodontic treatment, which addresses dental and skeletal discrepancies, plays a crucial role in improving occlusal harmony, mastication, speech, and facial appearance.[3,4] Despite the evolution of orthodontic techniques and the growing availability of care, many individuals remain either unaware of or misinformed about the full scope and benefits of orthodontic intervention.[5] This gap between available services and their utilisation may be attributed to limited awareness, cultural beliefs, social stigma, financial constraints, or misconceptions about treatment duration and outcomes.[6].

Public awareness and attitudes toward orthodontic care are influenced by multiple factors, including age, gender, prior exposure to dental care, and access to information from dentists, peers, or digital media.[6,7,8] Ideally, orthodontic problems should be identified and managed during adolescence to take advantage of growth potential.[9] However, in many developing regions, including India, treatment is often delayed or pursued only for cosmetic enhancement in adulthood, rather than for preventive or functional purposes. This delay may reflect a lack of structured public health education on the therapeutic value of orthodontics beyond esthetics.[10]

In the Indian context, where malocclusion affects an estimated 20–43% of adolescents, the actual rate of treatment remains disproportionately low.[11] Many individuals associate orthodontics exclusively with braces for straightening teeth and may be unaware of its role in preventing periodontal damage, temporomandibular joint disorders, or long-term bite dysfunction. In addition, orthodontic treatment is often perceived as prolonged, expensive, and socially inconvenient, particularly among adolescents concerned with visible appliances and peer perception [12,13].

While some recent studies in India have evaluated orthodontic awareness in specific populations, such as school or college students, fewer have comprehensively assessed how demographic variables like age and gender influence orthodontic perceptions. Moreover, limited attention has been given to public misconceptions that may hinder timely treatment-seeking behaviour.

Given this backdrop, the present cross-sectional survey was conducted to evaluate awareness, motivations, barriers, and misconceptions related to orthodontic treatment among a broad population sample. It further aimed to examine how these factors vary across age groups and between genders, with the goal of informing more effective public education and orthodontic outreach strategies.

2. METHODOLOGY

This cross-sectional, questionnaire-based survey was conducted to assess the awareness, knowledge, attitudes, and perceived barriers related to orthodontic treatment among a diverse population sample. The study adhered to the ethical principles outlined in the Declaration of Helsinki and was approved by the Institutional Ethical Review Board prior to commencement. Informed consent was obtained from all participants before data collection.

Study design and setting

The survey was administered electronically via a structured Google Form circulated through social media platforms (e.g., WhatsApp, Instagram, and email) over a period of two months. The target population included individuals of all age groups and backgrounds residing in India. The inclusion criteria were: (1) individuals aged 12 years and above, (2) ability to comprehend and respond to questions in English, and (3) voluntary consent to participate in the study. Participants with prior formal dental or orthodontic education were excluded to avoid response bias.

Sample size and sampling technique

A convenience sampling method was employed to collect data from the general population. A total of 365 complete responses were obtained and included in the final analysis. This sample size was deemed adequate based on previous similar surveys evaluating orthodontic awareness in comparable populations.

Questionnaire design

The questionnaire consisted of both closed-ended and multiple-response items divided into five sections:

Demographic information – age and first name.

General awareness – whether the respondent had heard of an orthodontist and knew what orthodontic treatment entails.

Perceptions and motivations – perceived need for treatment, reasons for seeking care (e.g., esthetic, functional), and self-rated awareness of treatment duration and benefits.

Knowledge and misconceptions – understanding of the scope of orthodontic treatment, appropriate age for braces, and expected duration of treatment.

Barriers to care – factors deterring the respondent from undergoing orthodontic treatment, such as cost, time constraints, social acceptance, or lack of awareness.

The questionnaire was pilot-tested among 20 individuals to assess clarity, comprehension, and internal consistency. A Cronbach's alpha value of 0.81 was yielded which indicated a good face validity of the questionnaire. Necessary modifications were made based on feedback. Responses from the pilot phase were not included in the final analysis.

Statistical analysis

All data were compiled and analysed using Microsoft Excel and IBM SPSS Statistics (version 26.0). Descriptive statistics (frequencies, percentages, mean, standard deviation) were computed for demographic variables and survey responses. Chi-

square (χ^2) tests were used to assess associations between awareness, perceptions, and barriers with age-group (categorized as ≤ 20 , 21–30, 31–40, 41–50, 51–60, and ≥ 61 years) and gender (inferred). Where expected cell counts were below five, Fisher's exact test was applied automatically. A p -value of less than 0.05 was considered statistically significant. Responses to multiple-choice and multiple-response questions were analysed and presented in tabular and graphical formats to enhance clarity.

3. RESULTS

Socio-demographic characteristics

The study sample comprised 365 individuals spanning a wide age range, with a mean age of 31.4 ± 13.9 years and a median age of 25 years, indicating a predominantly younger population. Nearly 60% of respondents were aged 30 years or below, with the largest age group being 21–30 years. A smaller proportion represented middle-aged and older adults, with only a minor fraction (4.1%) aged 61 years or above. The distribution was nearly equal between genders, with males accounting for 50.7% and females for 49.3% of the total participants.

Table 1. Socio-demographic profile of survey respondents verified against the uploaded data set (n = 365)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	≤ 20	90	24.7 %
	21 – 30	129	35.3 %
	31 – 40	46	12.6 %
	41 – 50	40	11.0 %
	51 – 60	37	10.1 %
	≥ 61	15	4.1 %
	Not reported	8	2.2 %
	Total	365	100 %
Gender	Male	185	50.7 %
	Female	180	49.3 %
	Total	365	100 %

Age (years): mean \pm SD = 31.4 ± 13.9 ; median = 25.

Table 2. General awareness and knowledge of orthodontics with associations by age-group and gender (n = 365)

Item assessed	Yes n (%)	No n (%)	p (Age-group)	p (Gender)
Are you aware of an orthodontist?	320 (87.7 %)	45 (12.3 %)	0.153	0.741
Do you know what an orthodontic treatment is?	312 (85.5 %)	53 (14.5 %)	0.006	0.475
Believe that correcting irregular teeth improves the smile	348 (95.3 %)	17 (4.7 %)	0.547	0.266
Believe it also enhances chewing, speech and oral hygiene	351 (96.2 %)	14 (3.8 %)	0.073	0.535
Think there is a specific age for orthodontic treatment	220 (60.3 %)	145 (39.7 %)	0.113	0.242
Aware of the typical duration of orthodontic treatment	271 (74.2 %)	94 (25.8 %)	< 0.001	0.367

†Pearson's χ^2 test (six age-bands including "Not reported" and binary for gender).

Overall awareness was high: nearly nine in ten respondents recognised the term *orthodontist* and understood what orthodontic treatment involves, and over 95 % agreed that correcting irregular teeth improves aesthetics and oral function. Age exerted a measurable influence on two specific knowledge items. Recognition of what orthodontic treatment entails rose significantly with age ($p = 0.006$), and awareness of typical treatment duration was likewise age-related, with older groups more often answering “Yes” ($p < 0.001$). No awareness variable differed significantly by inferred gender (all $p > 0.24$). These findings suggest that while basic orthodontic awareness is widespread across the cohort, detailed knowledge improves with increasing age rather than differing by gender.

Self-perceived treatment need

Nearly half of the respondents (46.6%) believed that they currently required orthodontic treatment, indicating a substantial level of self-awareness regarding dental alignment or esthetic concerns. Interestingly, this self-perceived need was significantly influenced by age ($p < 0.001$), with younger individuals—particularly those aged 21–30 years—more frequently expressing a desire for treatment compared to older adults. This trend suggests that younger age groups may be more conscious of dental esthetics or are more frequently exposed to orthodontic awareness through peer networks and digital media. In contrast, the perception of need did not significantly differ between genders ($p = 1.000$), indicating that both male and female respondents were equally likely to express a desire for orthodontic care. These findings underscore the importance of age-targeted awareness strategies, particularly among adolescents and young adults, to guide them toward timely and informed treatment decisions.

Table 3. Association of stated reasons for seeking orthodontic treatment with age-group and gender among respondents who perceived a treatment need (n = 170)

Reason cited *	n (%) of 170	p age-group	p gender
Forwardly placed teeth	49 (28.8 %)	0.423	1.000
To correct your smile	47 (27.6 %)	0.421	0.538
Irregular teeth	46 (27.1 %)	0.755	0.818
Difficulty while eating or speaking	15 (8.8 %)	0.314	0.701
Pain / clicking around ears	12 (7.1 %)	0.881	0.969

* Multiple-response question; each percentage is out of the 170 respondents who answered “Yes” to *Do you think you require orthodontic treatment now?*

Pearson’s χ^2 test comparing six age-groups (≤ 20 , 21–30, 31–40, 41–50, 51–60, ≥ 61 ; $df = 5$) and for binary gender ($df = 1$); Fisher’s exact applied automatically when expected counts < 5 .

Among the 365 respondents, 170 (46.6 %) believed they currently needed orthodontic treatment, providing the analytic base for Table 3. Multiple responses were permitted, and three aesthetic-aligned concerns dominated: forwardly placed anterior teeth was the single most frequent reason (49/170, 28.8 %), followed closely by a desire to correct the overall smile (47/170, 27.6 %) and dissatisfaction with irregular tooth alignment (46/170, 27.1 %). Functional considerations were less common: 15 participants (8.8 %) cited difficulty while eating or speaking, while 12 (7.1 %) reported pain or temporomandibular clicking as a trigger for seeking care. Subgroup analysis revealed that none of the stated motivations varied significantly across the six age-bands used in Table 1 (all $p = 0.314$ – 0.881) or between the name-inferred male and female groups (all $p = 0.538$ – 1.000). In practical terms, adolescents, young adults and older adults were equally likely to prioritise aesthetic drivers, and the distribution of reasons was virtually identical between genders.

Perceived barriers to Orthodontic Care

One-third of respondents (33.4 %) indicated that they did not seek orthodontic care because they felt no need or had previously undergone treatment, making this the most common barrier. Time constraints (16.7 %), perceived social awkwardness of wearing braces (14.0 %), and cost concerns (14.0 %) formed a second tier, while the perceived long duration of therapy (12.6 %) and simple lack of awareness (9.3 %) were less frequent (Table 4).

Age showed significant relationships with three barriers. Younger participants were more likely to cite social acceptance concerns ($p = 0.019$) and long treatment duration ($p = 0.049$), whereas lack of awareness was strongly clustered in the youngest and oldest groups ($p < 0.001$). Gender was largely unrelated to the barrier profile, except that females more often mentioned social acceptance than males ($p = 0.045$).

Table 4. Reported barriers to seeking orthodontic care and their associations with age-group and gender (n = 365)

Barrier to seeking treatment	Frequency n (%)	p (Age-group)	p (Gender)
No need / had treatment before	122 (33.4 %)	0.084	0.580
Time constraint (difficult to attend visits)	61 (16.7 %)	0.057	0.057
Social acceptance (wearing braces awkward)	51 (14.0 %)	0.019*	0.045*
Cost factor	51 (14.0 %)	0.735	0.625
Long treatment duration	46 (12.6 %)	0.049*	0.590
Lack of awareness of the treatment	34 (9.3 %)	< 0.001*	0.415

Pearson's χ^2 across six age-bands (≤ 20 , 21–30, 31–40, 41–50, 51–60, ≥ 61); df = 5 and for binary gender; df = 1. * = statistically significant ($p < 0.05$)

Table 5. Detailed knowledge and misconceptions about orthodontic treatment among respondents

Knowledge theme (denominator)	Category / response option	Frequency (n)	Percentage (%)
Perceived scope of orthodontic treatment (all respondents, n = 365)	Correction of irregular teeth	291	79.7
	Replacement of missing teeth	51	14.0
	Management of gum problems	23	6.3
Perceived correct age for treatment (only those who answered “Yes” to “Is there a certain age?”, n = 219)	Before 18 years	83	37.9
	After 18 years	79	36.1
	Any age	47	21.5
	Both before & after 18 years	6	2.7
	Adolescence (10 – 14 yrs)	4	1.8
Perceived duration of treatment (only those aware of the duration, n = 267)	1 – 2 years	176	65.9
	6 months – 1 year	45	16.9
	> 2 years	46	17.2

Percentages are column percentages within each thematic block (scope, age, duration); totals therefore equal 100 % for each block but not overall. Respondents could select only one option per question.

Knowledge about the *scope* of orthodontics was strongly skewed toward esthetic correction: four-fifths of participants (79.7 %) identified “correction of irregular teeth,” whereas far fewer associated orthodontics with tooth replacement (14.0 %) or periodontal management (6.3 %), revealing persistent misconceptions about its therapeutic breadth. Among the 219 individuals who believed there is a “right age” for braces, opinion split almost evenly between “before 18 years” (37.9 %) and “after 18 years” (36.1 %); only one-fifth (21.5 %) recognised that treatment can be effective at any age. This polarised view underscores the need for clearer public messaging on timing.

Perceptions of how long treatment lasts were more convergent: two-thirds (65.9 %) of the 267 respondents aware of duration chose the textbook 1–2-year window, while roughly one-third expected either a shorter course (6 months–1 year, 16.9 %) or a protracted course (> 2 years, 17.2 %). Collectively, the data suggest that although many participants grasp the basic time commitment, sizeable minorities retain inaccurate beliefs about both the therapeutic span and the permissible age range for care.

The mix of varied significantly across the six age-bands ($p = 0.007$). Respondents ≤ 30 years mostly selected “correction of irregular teeth,” whereas those ≥ 41 years were proportionally more likely to mention “replacement of missing teeth” or “gum-related problems.” No gender effect was detectable ($p = 0.830$). Perceived ‘correct age’ for braces. Among the 220 participants who believed a specific age mattered, the distribution of options (before 18 y, after 18 y, any age, etc.) did not differ convincingly across age-bands ($p = 0.056$) and was likewise unrelated to inferred gender ($p = 0.221$). Perceived duration of treatment. Understanding of how long orthodontics lasts was strongly age-dependent ($p < 0.001$). Younger cohorts (≤ 20 y) were far more likely to underestimate the course (choosing “6 months–1 year”), whereas middle-aged adults more often selected “> 2 years.” Again, no gender association emerged ($p = 0.433$).

4. DISCUSSION

The objective of the present cross-sectional survey was to evaluate the awareness, knowledge, motivations, and perceived barriers related to orthodontic treatment in a diverse sample of the Indian population. The findings indicate a high level of basic awareness, with nearly 88% of participants having heard of an orthodontist and 85.5% claiming to understand what orthodontic treatment entails. These figures are consistent with several recent studies conducted in urban and semi-urban Indian populations, where increased access to digital platforms and dental outreach programs has led to improved public understanding of orthodontic services [10,13,14]. However, a deeper analysis revealed that while general familiarity was widespread, more nuanced knowledge, such as the therapeutic scope, correct timing, and duration of treatment, was often inconsistent or inaccurate, especially among younger respondents.

Self-perceived need for orthodontic treatment was reported by approximately 47% of respondents, with a significantly higher proportion among younger age groups. This trend may reflect a growing esthetic consciousness in younger individuals influenced by social media, peer comparisons, and evolving societal norms regarding appearance [15]. The leading motivations for seeking orthodontic care were predominantly esthetic, including correction of forwardly placed or irregular teeth and desire to improve the smile [16,17]. Functional concerns such as difficulty in eating, pain, or temporomandibular clicking were much less commonly reported. These findings echo earlier research highlighting that esthetics, rather than functional necessity, is the principal driver of treatment-seeking behaviour, especially among adolescents and young adults [18].

Knowledge about the broader scope of orthodontics was limited. While nearly 80% correctly associated orthodontics with the correction of irregular teeth, only a small fraction recognised its role in addressing tooth loss or periodontal issues, suggesting a narrow understanding of the discipline. Similarly, among those who believed there is a specific age for treatment, the majority were divided between “before 18” and “after 18,” with only one-fifth acknowledging that orthodontic care can be pursued at any age. Awareness of treatment duration also varied significantly with age, with younger respondents more likely to underestimate the time involved. These misconceptions underscore the need for comprehensive patient education, not just to promote treatment uptake but also to set realistic expectations [19, 20].

Barriers to treatment were diverse and age-dependent. The most common reasons for not pursuing orthodontic care included lack of perceived need, prior treatment, time constraints, and social discomfort with wearing braces [21,22]. Notably, social acceptance concerns were significantly higher among younger and female participants, reflecting the psychosocial stigma still associated with visible orthodontic appliances [23]. Cost and treatment duration were also cited but showed no significant variation across demographic strata, suggesting that these practical barriers are universally perceived [24].

The study has several limitations. First, the use of convenience sampling and electronic distribution limits generalisability to populations with restricted internet access or lower literacy. Second, gender was inferred algorithmically based on first names, which may introduce classification bias. Third, self-reported responses may be subject to social desirability or recall bias. Despite these limitations, the study provides valuable insights into the public's orthodontic perceptions and highlights areas for targeted intervention.

Future research should aim to include larger, stratified samples across urban and rural regions, incorporate validated gender and socioeconomic data, and explore the impact of educational interventions on correcting misconceptions. Additionally, longitudinal studies could assess whether increased awareness translates into higher treatment uptake and improved oral health outcomes. Overall, these findings can inform community-level education strategies and policy planning aimed at improving orthodontic literacy and access in India.

5. CONCLUSION

The present study revealed that while general awareness of orthodontics is relatively high among the surveyed population,

significant gaps persist in detailed knowledge regarding the scope, appropriate timing, and duration of treatment. Aesthetic concerns were the primary motivators for seeking care, whereas misconceptions and perceived barriers such as social acceptance, cost, and time constraints, were common, particularly among younger individuals. Age emerged as a significant determinant of both knowledge and treatment-seeking perception, whereas gender showed limited influence. These findings highlight the need for targeted, age-appropriate educational initiatives to enhance orthodontic literacy and dispel misconceptions. Strengthening public awareness through school-based programs, digital media campaigns, and primary care integration may improve timely access to orthodontic care and contribute to better long-term oral health outcomes

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