

## Knowledge, awareness, and perception on the status of malocclusion among adolescents in rural area (Thiruvallur)

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### ABSTRACT

**Aim:** The aim of this survey is to check the knowledge and awareness on the status of malocclusion among adolescents in Thiruvallur district. **Introduction:** Malocclusion is defined as the deviation from normal occlusion (i.e., the relationship of the upper teeth to lower teeth where the jaws are clenched and the highest parts on the occlusal surface of the upper teeth are resting on the lowest parts on the occlusal surface of the lower teeth and vice versa). Malocclusion is one of the most common oral problems, together with dental caries, gingival disease, and fluorosis. Well-aligned teeth not only contribute to the health of the oral cavity and stomatognathic system but also influence the personality of the individual. Malocclusion compromises the health of oral tissues and also can lead to psychological and social problems. The aim of this survey is to check the knowledge and awareness on the status of malocclusion among adolescents in Thiruvallur district of Chennai in Tamil Nadu, India. **Materials and Methods:** A total of 70 people from age 12 to 18 were included in this survey. The survey was done using a website called [www.surveypplanet.com](http://www.surveypplanet.com). Adolescents were selected randomly in Mahalakshmi Nagar in Thiruvallur district. The link for the survey was sent on a digital platform. The survey consisted of 14 questions. The collective data were then reprinted. **Results:** The survey was filled by 31 males and 38 females. 29.4% were in the age group of 17, 22.1% were 13, 14.7% were 10, 13.2% were 12, 10.3% were 15, and 10.3% were 16 years old. 43.5% were satisfied with the appearance of their teeth, 52.9% were satisfied with the arrangement of their teeth, and 61.4% were confident about their smile. Only 38.6% were aware of malocclusion. 31.5% guessed the ill effect of malocclusion to be accidental biting of tongue and cheek. Only 18.9% of the people guessed the possibility of relationship of malocclusion and dental caries. 49.3% had difficulties to maintain oral hygiene due to malocclusion. Finally, 51.5% of the people wanted to get their malocclusion corrected after knowing the ill effects of it. **Discussion:** It appears that there is less awareness of malocclusion among adolescents in Thiruvallur district. Another thing to be noticed is that malocclusion is not taken as a serious health concern as only half the population wanted to get it treated even after knowing the ill effects of it. This can be due to poverty, low awareness about the severity of health impairment caused by malocclusion, etc. More awareness should be created of the types of occlusion and the ill effects of malocclusion if not corrected.

**KEY WORDS:** Malocclusion, awareness, knowledge, rural areas

### INTRODUCTION

Any deviation from normal occlusion is malocclusion which includes developmental anomalies, crowded, irregular, and protruding teeth. Malocclusion has been a problem since antiquity, and attempts to correct these disorders go back to at least 1000 BC.<sup>[1]</sup> Malocclusion is a common problem that creates no

problems at the start but can deteriorate oral health, impede speech, and cause many problems in the long run. Malocclusion varies from country to country and also among different races. In recent years, a lot of efforts have been put forward on measuring the severity and prevalence of malocclusion and orthodontic treatment need worldwide.<sup>[2]</sup> Studies have been done worldwide to know the prevalence of malocclusion. Nigeria,<sup>[3]</sup> Malaysia,<sup>[4]</sup> and Spain<sup>[5]</sup> have reported the prevalence as 13, 37, and 41%, respectively.<sup>[6]</sup>

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A recent study by Kotsomitis *et al.* on 202 orthodontic patients reported a prevalence of ectopic eruption of 29.7% and agenesis in 8.4%.<sup>[7]</sup> To find the prevalence of malocclusion and treatment need among the young Chinese adults, Tang assessed 108 male Chinese 1<sup>st</sup> year dental students in Hong Kong, of which 41.7% needed orthodontic treatment and 24.1% needed comprehensive orthodontic treatment to correct malocclusions. The most commonly occurring feature was crowding (38.9%) followed by Class II malocclusion and Class III malocclusion (21.3% and 14.8%, respectively).<sup>[8]</sup>

Malocclusion and dentofacial deformities are highly prevalent and can influence physical, social, and psychological functioning, thus playing an important role in social acceptance and interactions.<sup>[9]</sup> The status of oral health has a direct correlation with the well-being of an individual. Hence, disorders such as malocclusion are a great detriment to the society. Malocclusion is not a single entity but rather a collection of situations, each in itself constituting a problem, and any of these situations can be complicated by a multitude of genetic and environmental causes.<sup>[10]</sup> It has also been shown to affect periodontal health, increase the prevalence of dental caries, and cause temporomandibular joint problems.

## MATERIALS AND METHODS

A total of 70 people between the age of 12 and 18 were asked to fill an online questionnaire which was created on a website called [www.surveypal.com](http://www.surveypal.com). Table 1 shows the questions asked, the response, and the percentage of people.

## RESULTS

Malocclusion can also be defined as the mismatch in the normal arrangement of teeth. Hence, the arrangement and the appearance of the entire set of teeth can change due to change in position or orientation of a single tooth. As shown in Figure 1, 43.5% of the people were satisfied with the appearance of their teeth while 44.9% were not satisfied. 11.6% of the people were not sure about their opinion on this regard. This could be due to any changes in the position or orientation of the posterior teeth which could have caused malocclusion but would not have changed the appearance of the anterior teeth significantly.

As shown in Figure 2, 52.9% of people (more than half) were satisfied with the arrangement of their teeth, while 47.1% of the people were not satisfied with the arrangement of their teeth. This could be due to malocclusion which can cause discomfort in chewing because of misaligned teeth.

As shown in Figures 3 and 4, 50% of people had spaces between their teeth and 45.7% people had crowded teeth, respectively.

As shown in Figure 5, only 38.6% were aware of malocclusion. This shows that although a good number of adolescents know about malocclusion, the awareness of malocclusion among adolescents is less in Thiruvallur district. As shown in Figure 6, 50% of the people know about the ill effects of malocclusion in the oral cavity.

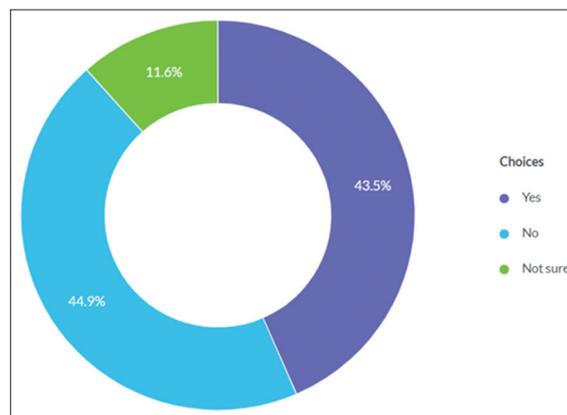


Figure 1: Appearance of teeth

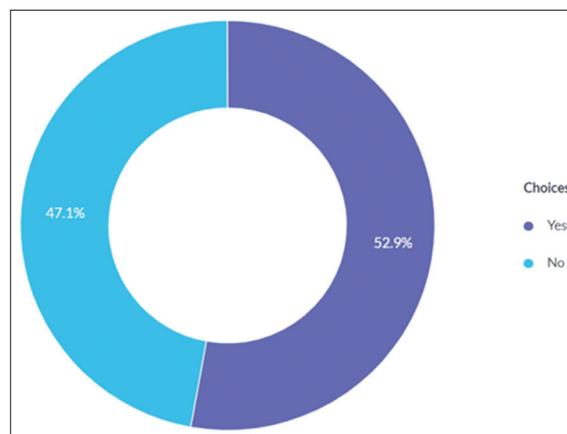


Figure 2: Arrangement of teeth

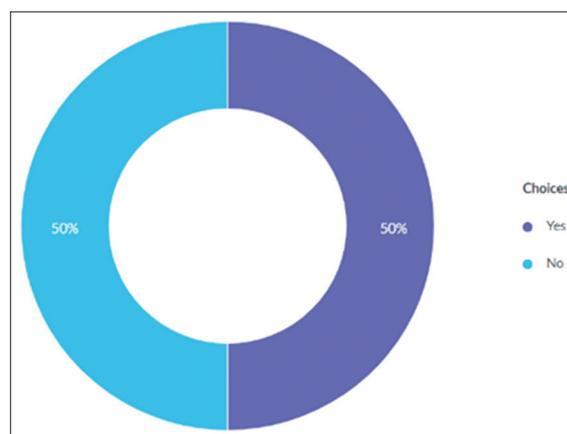
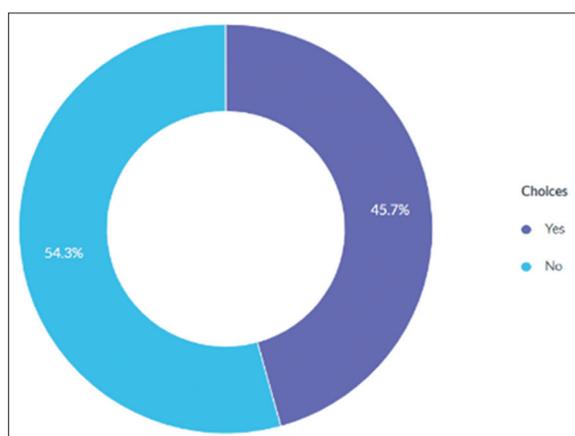


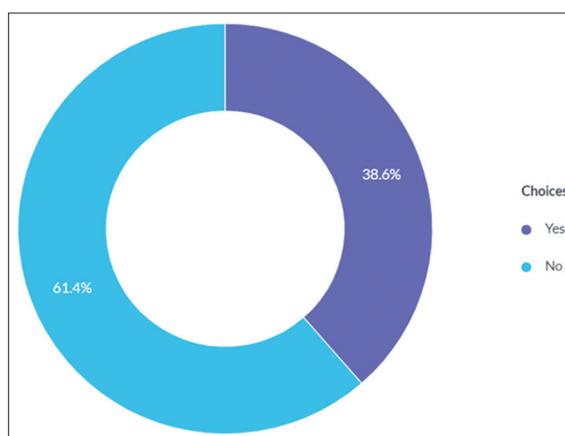
Figure 3: Spaces in teeth

**Table 1: Characteristics of the study**

Question	Response	Number (%)
Gender	Male	31 (44.3)
	Female	38 (54.3)
	Other	1 (1.4)
Age	12	9 (13.2)
	13	15 (22.1)
	14	10 (14.7)
	15	7 (10.3)
	16	7 (10.3)
	17	20 (29.4)
Are you satisfied with the appearance of your teeth?	Yes	30 (43.5)
	No	31 (44.9)
	Not sure	8 (11.6)
Are you satisfied with the arrangement of your teeth?	Yes	37 (52.9)
	No	33 (47.1)
Do you have spaces between your teeth?	Yes	35 (50)
	No	35 (50)
Do you have crowded teeth?	Yes	32 (45.7)
	No	39 (54.3)
Are you confident about your smile?	Yes	43 (61.4)
	No	27 (38.6)
Do you think Criss cross teeth affect your social standings?	Yes	44 (62.9)
	No	26 (37.1)
Are you aware of malocclusion?	Yes	27 (38.6)
	No	43 (61.4)
Malocclusion is the misalignment between the upper and lower teeth. Do you know what ill effects malocclusion can have on the oral health?	Yes	35 (50)
	No	35 (50)
Choose what do you think are the ill effects of malocclusion.	Discomfort while chewing	22 (19.8)
	Accidental biting of tongue or cheeks	35 (31.5)
	Periodontal Diseases	23 (20.7)
	Dental Caries	21 (18.9)
	Mandibular Dysfunction	10 (9)
Have you ever been bullied due to malocclusion?	Yes	31 (44.3)
	No	39 (55.7)
Are you finding it difficult to maintain oral hygiene due to malocclusion?	Yes	33 (49.3)
	No	34 (50.7)
After knowing the ill effects of malocclusion, will you get it corrected?	Yes	35 (51.5)
	No	17 (25)
	No, because I do not have malocclusion	16 (23.5)



**Figure 4:** Crowded teeth



**Figure 5:** What is malocclusion

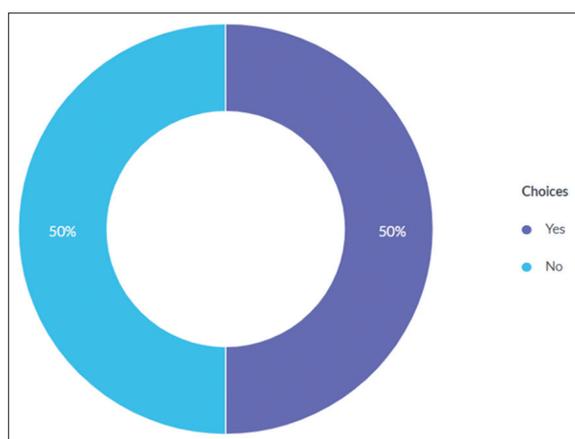
When asked to select the most appropriate ill effect of malocclusion, 31.5% of people associated malocclusion to accidental biting or cheeks, 20.7% of people associated malocclusion to periodontal diseases, 19.8% of people associated malocclusion with discomfort while chewing, and 9% of the people associated malocclusion with mandibular dysfunction [Figure 7].

18.9% of the people associated malocclusion with dental caries. This shows that only a few people are able to associate malocclusion with dental caries.

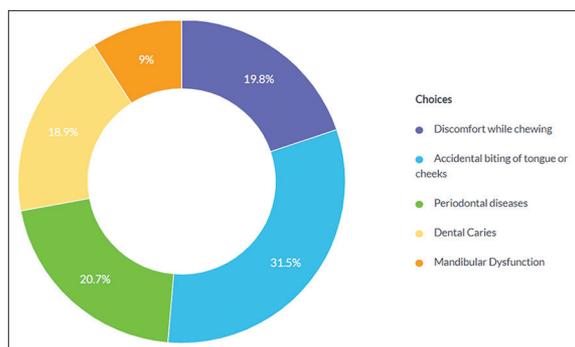
About 51.5% of the people wanted to correct their malocclusion after knowing its ill effects. 25% did not

want to correct it and 23.5% did not have malocclusion [Figure 8].

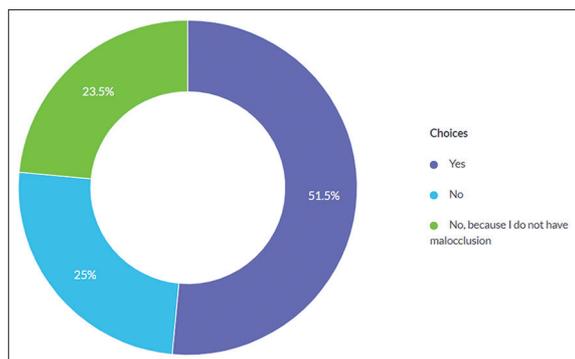
Thirty-one males, 38 females, and 1 transgender took part in the survey. 62.9% of people thought that Criss cross teeth affected a person's social standings. 61.4% were confident about their smiles, and 44.3% were bullied sometimes in their lives due to malocclusion. 18.9% of the people were able to associate dental carries with malocclusion. 49.3% are finding it difficult to maintain oral hygiene due to their teeth arrangement. In short, adolescents in Thiruvallur district were mildly aware of malocclusion, but once the meaning was stated, they were able to related it to other oral health disorders. Many of them were able to



**Figure 6:** Awareness on ill effects of malocclusion



**Figure 7:** Ill effects of malocclusion



**Figure 8:** Will you correct your malocclusion?

correlate malocclusion with other oral disorders, and in fear of these disorders, many of the people who had malocclusion wanted to correct it.

## DISCUSSION

India, a developing country, faces many challenges in rendering oral health needs. The majority of Indian population resides in rural areas, of which more than 40% constitute children.<sup>[11]</sup> It is necessary to know the prevalence and distribution of oral health problems and understand the dental health practices that people follow. Such information is basic for formulation of oral health policies and appropriate programs, to improve awareness and knowledge of general public about the preventive and promotive aspects of oral health, to create the required services, and to train the necessary dental workforce to meet these needs.<sup>[12]</sup> Lack of awareness about dental diseases has resulted in gross neglect of oral health. There is no component of oral health in the present health-care system in India. The grass-root level health workers and doctors do not have adequate knowledge about prevention of orodental problems. All the above factors have resulted in poor orodental health of our population.<sup>[12]</sup>

Among the dental conditions, malocclusion is the second most common in children and young adults, next to dental caries.<sup>[13]</sup> A study done by Chandra *et al.* showed that 15.5% of the study subjects (12.4% - males and 19.4% - females) in rural areas and 22.9% in urban areas (15.4% - males and 30.8% - females) had a DAI score of more than 25.<sup>[13]</sup> Another study done by Aikins *et al.* showed that 82.5% of the students among which the study was conducted rated their teeth toward the more attractive end of the scale (grades 1–4).<sup>[14]</sup> A similar study done by Onyeaso and Arowojolu showed almost equal number of male (79.8%) and female (83.6%) participants, respectively, perceived a need for treatment.<sup>[15]</sup> Teenagers, in particular, have been found to attach great importance to an attractive dental appearance<sup>[14,16,17,18,19,20]</sup> and have also been shown to have developed an oral perceptual awareness.<sup>[21,22]</sup> Adolescence is the time when concern over appearance and facial attractiveness is developing, which translates to an increased awareness of body image.<sup>[23]</sup> Thus, the self-perception of malocclusion is an important parameter in treatment planning for adolescent populations.<sup>[15]</sup>

## CONCLUSION

The adolescents in Thiruvallur district were mildly aware of malocclusion, but once the meaning was stated, they were able to related it to other oral health disorders. Many of them were able to correlate

malocclusion with other oral disorders, and in fear of these disorders, many of the people who had malocclusion wanted to correct it.

## REFERENCES

1. Soni UN, Baheti MJ, Dash S, Toshniwal NG, Baldawa RS. Knowledge and awareness of malocclusion among rural population in India. *Asian Pac J Health Sci* 2014;1:329-34.
2. Prijitha A, Ganesh A, Pullishery S, Rijitha AF. Prevalence of malocclusion among Indian children Aged 12-15 years using dental aesthetic index a systematic review. *IOSR J Dent Med Sci* 2016;15:89-94.
3. Otuyemi OD, Ogunyinka A, Dosumu O, Cons NC, Jenny J. Malocclusion and orthodontic treatment need of secondary school students in Nigeria according to the dental aesthetic index (DAI). *Int Dent J* 1999;49:203-10.
4. Esa R, Razak IA, Allister JH. Epidemiology of malocclusion and orthodontic treatment need of 12-13-year-old Malaysian schoolchildren. *Community Dent Health* 2001;18:31-6.
5. Baca-Garcia A, Bravo M, Baca P, Baca A, Junco P. Malocclusions and orthodontic treatment needs in a group of Spanish adolescents using the dental aesthetic index. *Int Dent J* 2004;54:138-42.
6. Avinash B, Shivalinga BM, Balasubramanian S, Shekar S, Chandrashekar BR, Avinash BS, *et al.* Orthodontic treatment needs of 12-year-old school-going children of Mysuru district, Karnataka, India: A Cross-sectional study. *Int J Clin Pediatr Dent* 2018;11:307-16.
7. Kotsomitis N, Dunne MP, Freer TJ. A genetic aetiology for some common dental anomalies: A pilot twin study. *Aust Orthod J* 1996;14:172-8.
8. Tang EL. The prevalence of malocclusion amongst Hong Kong male dental students. *Br J Orthod* 1994;21:57-63.
9. Chen M, Feng ZC, Liu X, Li ZM, Cai B, Wang DW, *et al.* Impact of malocclusion on oral health-related quality of life in young adults. *Angle Orthod* 2015;85:986-91.
10. Chauhan D, Sachdev V, Chauhan T, Gupta KK. A study of malocclusion and orthodontic treatment needs according to dental aesthetic index among school children of a hilly state of India. *J Int Soc Prev Community Dent* 2013;3:32-7.
11. Mahesh Kumar P, Joseph T, Varma RB, Jayanthi M. Oral health status of 5 years and 12 years school going children in Chennai city an epidemiological study. *J Indian Soc Pedod Prev Dent* 2005;23:17-22.
12. Bali RK, Mathur VB, Talwar PP, Chanana HB. National Oral Health Survey and Fluoride mapping 2002-2003, India. New Delhi: Dental Council of India; 2004.
13. Shekar BR, Suma S, Kumar S, Sukhabogi JR, Manjunath BC. Malocclusion status among 15 years old adolescents in relation to fluoride concentration and area of residence. *Indian J Dent Res* 2013;24:1-7.
14. Aikins EA, Dacosta OO, Onyeaso CO, Isiekwe MC. Self-perception of malocclusion among Nigerian adolescents using the aesthetic component of the IOTN. *Open Dent J* 2012;6:61-6.
15. Onyeaso CO, Arowojolu MO. Perceived, desired, and normatively determined orthodontic treatment needs among orthodontically untreated Nigerian adolescents. *West Afr J Med* 2003;22:5-9.
16. Grzywacz I. The value of the aesthetic component of the index of orthodontic treatment need in the assessment of subjective orthodontic treatment need. *Eur J Orthod* 2003;25:57-63.
17. Onyeaso CO, Sanu OO. Psychosocial implications of malocclusion among 12-18 year old secondary school children in Ibadan, Nigeria. *Odontostomatol Trop* 2005;28:39-48.
18. Onyeaso CO, Sanu OO. Perception of personal dental appearance in Nigerian adolescents. *Am J Orthod Dentofacial Orthop* 2005;127:700-6.
19. Flores-Mir C, Major PW, Salazar FR. Self-perceived orthodontic treatment need evaluated through 3 scales in a university population. *J Orthod* 2004;31:329-34.
20. Helm S, Petersen PE, Kreiborg S, Solow B. Effect of separate malocclusion traits on concern for dental appearance. *Community Dent Oral Epidemiol* 1986;14:217-20.
21. Baldwin DC. Appearance and aesthetics in oral health. *Community Dent Oral Epidemiol* 1980;8:244-56.
22. Tulloch JF, Shaw WC, Underhill C, Smith A, Jones G, Jones M, *et al.* A comparison of attitudes toward orthodontic treatment in British and American communities. *Am J Orthod* 1984;85:253-9.
23. Mugonzibwa EA, Kuijpers-Jagtman AM, Van't Hof MA, Kikwilu EN. Perceptions of dental attractiveness and orthodontic treatment need among Tanzanian children. *Am J Orthod Dentofacial Orthop* 2004;125:426-33.

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