

**Awareness towards Orthodontic treatment in Mandi Gobindgarh population**

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**Abstract**

**Objective:** This study was carried out to know the level of awareness regarding orthodontic treatment in Mandi Gobindgarh population.

**Materials and methods**

A questionnaire survey was conducted in Mandi Gobindgarh population in Punjab. A total of 237 subjects aged between 15-30 years that included 119 females and 118 males were selected randomly. A questionnaire consisting of 25 questions including general information, knowledge, and awareness of orthodontic treatment was prepared and the subjects were given 20 min to fill it. The purpose of the study and questionnaire forms were explained by the examiner. Descriptive statistics was applied for the frequency distribution and percentage of awareness of subjects towards orthodontic treatment. Chi-square test for the association between the study variables. Consecutively, Mann-Whitney U test was applied to test significance among both the category of gender and Kruskal-Wallis test applied to test significance among the other study variables. The statistical significance was set at  $p \leq 0.05$  for all the tests.

**Results:** Mann-Whitney U test depicted that there was a significant difference in the knowledge scores related to awareness of Dentist/Orthodontist, Knowledge about irregular teeth and Knowledge about Orthodontic treatment between the subjects of different gender ( $p < 0.001$ ). Kruskal-Wallis test showed that there was no significant difference in the knowledge scores between the subjects with different age groups ( $p \geq 0.05$ ).

**Conclusion:** From this study we can conclude that the awareness towards orthodontic treatment and the need to improve the facial aesthetics is more prevalent among the females. It will increase the demand for orthodontic treatment, as it helps in aesthetics, better oral hygiene, mastication and healthy lifestyle.

**Keywords:** Awareness, knowledge, orthodontic treatment

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### **Introduction**

Desire and need for orthodontic treatment are influenced by awareness, socioeconomic factors, and availability of the experts, ethnic trends and values. Awareness is the state or ability to perceive, feel, and be conscious. Orthodontic treatment, more than improving the quality-of-life, can bring physical, psychological, and social changes. The major benefits of orthodontic treatment are to improve the physical function, prevention of tissue damage, and correction of aesthetic component. The aim of this study is to assess the awareness level towards Orthodontic treatment in Mandi Gobindgarh population.

### **Materials and Methods**

**Ethics:** An electronic questionnaire survey was conducted in Mandi Gobindgarh, Punjab during November 2021. A total of 237 subjects including 119 females and 118 males were selected randomly.

**Study design:** A pre-structured questionnaire was made through google forms, consisting of 25 questions in 5 sections including general information, awareness about dentist/ Orthodontist, knowledge about irregular teeth, awareness about braces/ Orthodontic treatment, knowledge about Orthodontic treatment was prepared and given to subjects to assess their knowledge and awareness (attitude) toward orthodontic treatment.

The subjects were given only 15 minutes to fill it. Since this is a short time to gather information from other sources, the participants answered the questionnaire using their own knowledge. The need for the study and questionnaire form were explained by the examiner.

### **Inclusion criteria**

The survey included subjects,

1. Aged between 15-30 years
2. That are employed/un-employed and undergoing school education/college education
3. May or may not be aware about Orthodontic treatment

### **Exclusion criteria**

The survey excluded subjects,

1. Aged below 15years or aged above 30years
2. That are uneducated

### **Sample size**

$$n = \frac{Z_{(1-\alpha/2)}^2 SD^2}{d^2}$$

where 'd' is allowable error.

$$SD = 0.78$$

$$d = 10$$

$\alpha = 5\%$

Estimated sample size for each group,  $n = 233.7$

Sample size calculation was done based on erstwhile data procured from a former study which aims to investigate the awareness of children towards Orthodontic treatment and to create awareness of orthodontic treatment among the subjects. [Siddegowda et al., 2020]. For an  $\alpha$  value equal to 0.05,  $Z_{1-\alpha/2} = 1.96$ , and the allowable error 'd' was 10. The estimated sample size of 233.7 was standardized to 235.

### Sampling technique

Simple random sampling technique was used, The questionnaire of this study is as follows

The image shows a screenshot of a Google Forms survey. The title is "SURVEY ON AWARENESS TOWARDS ORTHODONTIC TREATMENT". The form is in a draft state, as indicated by the "Draft restored" text. The form is divided into several sections, each with a light green header. The sections are: "General Information", "Name: \*", "Age \*", "Sex: \*", "Occupation: \*", "Would you like to participate in this Survey \*", "Contact Number: \*", and "E-mail Id \*". Each section contains a text input field or radio button options. The "Name" field has a dropdown menu with "Mr." selected. The "Age" field has a text input field with "Your answer" below it. The "Sex" field has two radio button options: "Male" and "Female". The "Occupation" field has three radio button options: "Employed", "Un-Employed", and "Student". The "Would you like to participate in this Survey" field has two radio button options: "Yes" and "No". The "Contact Number" field has a text input field with "Your answer" below it. The "E-mail Id" field has a text input field with "Your answer" below it. The form is set against a white background with a light green border.

### Awareness about Dentist/ Orthodontist

1. Are you aware of a dentist? \*

- Yes
- No
- Don't Know

2. Have you visited a dentist before? \*

- Yes
- No
- Don't Know

3. Have you heard of an Orthodontist? \*

- Yes
- No
- Don't Know

4. Are you aware that they align your teeth? \*

- Yes
- No
- Don't Know

### Knowledge about irregular teeth

5. Have you noticed people having irregular teeth? \*

- Yes
- No
- Don't Know

6. Do you believe teeth should be properly aligned for a better facial appearance? \*

- Yes
- No
- Don't Know

7. Do you know crooked teeth have ill effects? \*

- Yes
- No
- Don't Know

8. Are you aware that few teeth may have to be removed for aligning irregular teeth? \*

- Yes
- No
- Don't Know

9. Does thumb-sucking has an effect on the front teeth alignment? \*

- Yes
- No
- Don't Know

#### Awareness about braces/ Orthodontic treatment

10. If you are aware of Orthodontic treatment, how you came to know about it? \*

- Friends
- Dental Camp's
- I'm not aware

11. Have you seen people wearing braces? \*

- Yes
- No
- Don't Know

12. Have you ever felt the need to wear braces? \*

- Yes
- No
- Don't Know

13. Has anyone advised you to get your teeth aligned? \*

- Yes
- No
- Don't Know

14. What is your parent's opinion in getting your teeth aligned? \*

- Concerned
- Not concerned
- They are not aware

#### Knowledge about Orthodontic treatment

15. Did you know taking braces treatment at an earlier age would improve facial appearance? \*

- Yes
- No
- Don't Know

16. According to you what is the optimum age for orthodontic treatment? \*

- 12-18 years
- 19-25 years
- Don't Know

17. Do you know the duration for braces treatment is longer than other dental procedures? \*

- Yes
- No
- Don't Know

18. Do you know that orthodontic treatment is costly? \*

- Yes
- No
- Don't Know

19. Do you know about the Orthodontic treatment options available? \*

- Yes
- No
- Don't Know

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20. If you will prefer to go for Orthodontic treatment, what will be your choice of Braces? \*

- Metallic braces
- Clear braces
- Aligners

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21. Do you think that Metallic braces will compromise your facial aesthetics? \*

- Yes
- No
- Don't Know

22. What will be first priority while choosing between the available treatment options? \*

- Cost
- Aesthetics
- Comfort

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23. Have you heard about Aligners? \*

- Yes
- No
- Don't Know

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24. Would you agree for any surgical procedures to improve your facial aesthetics? \*

- Yes
- No
- Don't Know

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25. If you get benefited by Orthodontic treatment, will you motivate others? \*

- Yes
- No
- Don't Know

### Statistical analysis

The responses for the questionnaire form were collected, and data was subjected to statistical analyses. Descriptive statistics was applied for the frequency distribution and percentage of awareness of children towards orthodontic treatment. Chi-square test for the association between the study variables. Consecutively, Mann-Whitney U test was applied to test significance among both the category of gender and Kruskal-Wallis test applied to test significance among the other study variables. The statistical significance was set at  $p \leq 0.05$  for all the tests

### Result

Table 1: Questionnaire format to analyse the awareness of children towards orthodontic treatment and descriptive analysis

From table 1 it is found that

Category	Question	Response	Descriptive
<b>Awareness about Dentist/ Orthodontist</b>	Are you aware of a dentist?	a. Yes b. No c. Don't Know	224(94.5%) 8(3.4%) 5(2.1%)
	Have you visited a dentist before?	a. Yes b. No c. Don't Know	182(76.8%) 50(21.1%) 5(2.1%)
	Have you heard of an Orthodontist?	a. Yes b. No c. Don't Know	187(78.9%) 43(18.1%) 7(3.0%)
	Are you aware that they align your teeth?	a. Yes b. No c. Don't Know	173(73%) 40(16.9%) 24(10.1%)
<b>Knowledge about irregular teeth</b>	Have you noticed people having irregular teeth?	a. Yes b. No c. Don't Know	218(92%) 14(5.9%) 5(2.1%)
	Do you believe teeth should be properly aligned for a better facial appearance?	a. Yes b. No c. Don't Know	198(83.5%) 22(9.3%) 17(7.2%)
	Do you know crooked teeth have ill effects?	a. Yes b. No c. Don't Know	135(57%) 54(22.8%) 48(20.3%)
	Are you aware that few teeth may have to be removed for aligning irregular teeth?	a. Yes b. No c. Don't Know	154(65%) 37(15.6%) 46(19.4%)



	Does thumb-sucking has an effect on the front teeth alignment?	a. Yes b. No c. Don't Know	128(54%) 34(14.3%) 75(31.6%)
Awareness about braces/ Orthodontic treatment	If you are aware of Orthodontic treatment, how you came to know about it?	a. Friends b. Dental Camp's c. I'm not aware	117(49.4%) 66(27.8%) 54(22.8%)
	Have you seen people wearing braces?	a. Yes b. No c. Don't Know	211(89%) 17(7.2%) 9(3.8%)
	Have you ever felt the need to wear braces?	a. Yes b. No c. Don't Know	95(40.1%) 124(52.3%) 18(7.6%)
	Has anyone advised you to get your teeth aligned?	a. Yes b. No c. Don't Know	101(42.6%) 130(54.9%) 6(2.5%)
	What is your parent's opinion in getting your teeth aligned?	a. Concerned b. Not concerned c. They are not aware	107(45.1%) 69(29.1%) 61(25.7%)
<b>Knowledge about Orthodontic treatment</b>	Did you know taking braces treatment at an earlier age would improve facial appearance?	a. Yes b. No c. Don't Know	157(66.2%) 41(17.3%) 39(16.5%)
	According to you what is the optimum age for orthodontic treatment?	a. 12-18 years	113(47.7%)

		b. 19-25 years c. Don't Know	61(25.7%) 63(26.6%)
	Do you know the duration for braces treatment is longer than other dental procedures?	a. Yes b. No c. Don't Know	137(57.8%) 40(16.9%) 60(25.3%)
	Do you know that orthodontic treatment is costly?	a. Yes b. No c. Don't Know	145(61.2%) 43(18.1%) 49(20.7%)
	Do you know about the Orthodontic treatment options available?	a. Yes b. No c. Don't Know	133(56.1%) 45(19%) 59(24.9%)
	If you will prefer to go for Orthodontic treatment, what will be your choice of Braces?	a. Metallic braces b. Clear braces c. Aligners	80(33.8%) 103(43.5%) 54(22.8%)
	Do you think that Metallic braces will compromise your facial aesthetics?	a. Yes b. No c. Don't Know	133(56.1%) 33(13.9%) 71(30%)
	What will be first priority while choosing between the available treatment options?	a. Cost b. Aesthetics c. Comfort	43(18.1%) 53(22.4%) 141(59.5%)
	Have you heard about Aligners?	a. Yes b. No c. Don't Know	127(53.6%) 66(27.8%) 44(18.6%)
	Would you agree for any surgical procedures to improve your facial aesthetics?	a. Yes b. No c. Don't Know	104(43.9%) 99(41.8%) 34(14.3%)
	If you get benefited by Orthodontic treatment, will you motivate others?	a. Yes b. No c. Don't Know	210(88.6%) 7(3%) 20(8.4%)

From table 1 it is found that,

#### **Awareness about dentist/ Orthodontist**

94.5% of the subjects are aware of a dentist, 76.8% have visited a dentist, 78.9% have heard of an Orthodontist and 73% were aware that Orthodontist's align the teeth.

**Knowledge about irregular teeth**

92% of the subjects have noticed people having irregular teeth, 83.5% believe that teeth should be properly aligned for a better facial appearance, 57% know that crooked teeth have ill effects, 65% are aware that few teeth may have to be removed for aligning irregular teeth and 54% believe that thumb sucking has an effect on the front teeth alignment.

**Awareness about braces/Orthodontic treatment**

49.4% of the subjects are aware of Orthodontic treatment because of their friends, 89% have seen other people wearing braces, 52.3% haven't felt the need to wear braces, 54.9% responded that none advised them to get their teeth aligned and parents of 45.1% subjects are concerned in getting the subject's teeth aligned.

**Knowledge about Orthodontic treatment**

66.2% of the subjects know that taking braces treatment at an earlier age would improve the facial appearance, 47.7% believe that 12-18years of age is the optimum age for Orthodontic treatment, 57.8% know that the duration for braces treatment is longer than other dental procedures, 61.2% people know that Orthodontic treatment is costly, 56.1% know about the Orthodontic treatment options available, 43.5% of the subjects prefer going for clear braces treatment, 56.1% feel that metallic braces will compromise the facial aesthetics, 59.5% responded that comfort will be their first priority in choosing between the available treatment options, 53.6% have heard about aligners, 43.9% agreed to undergo any surgical procedures to improve their facial aesthetics and 88.6% of the subjects responded that they would motivate others to undergo Orthodontic treatment.

		Age					df	P value
		<15	16-20	21-25	26-30	>30		
Occupation	Student	1	73	97	6	0	8	0.000*
	Employed	0	5	20	18	5		
	Unemployed	0	0	6	6	0		
Total		1	78	123	30	5		

Table 2: Occupation wise distribution of the population in various age groups.

		Age					df	P value
		<15	16-20	21-25	26-30	>30		
Occupation	Student	1	73	97	6	0	8	0.000*
	Employed	0	5	20	18	5		
	Unemployed	0	0	6	6	0		
Total		1	78	123	30	5		

\*Statistically significant  $p \leq 0.05$

\* Indicates Chi-Square test.

Table 3: Gender wise distribution of the population in various age groups

		Age					df	p value
		<15	16-20	21-25	26-30	>30		
Gender	Male	1	29	69	16	3	4	0.082
	Female	0	49	54	14	2		
Total		1	78	123	30	5		

\*Statistically significant  $p \leq 0.05$

\* Indicates Chi-Square test

From table 2 & 3,

The Chi-square test was performed to check the association between occupation, gender and age groups. It was found that there was no relation between occupation, gender and age groups.

Table 4: Awareness towards orthodontic treatment in boys and girls.

Gender	Awareness of Dentist/ Orthodontist		Knowledge about irregular teeth		Awareness about braces/ Orthodontic treatment		Knowledge about Orthodontic treatment	
	Mean	S. D	Mean	S. D	Mean	S. D	Mean	S. D
Boys	2.93	1.26	3.09	3.93	2.70	1.48	4.71	2.83
Girls	3.53	0.79	1.53	1.23	3.17	1.44	5.90	2.41
Z value	-3.80**		-4.34**		-0.18**		-3.23**	
Sig(2-tailed) test	0.000*		0.000*		0.854		0.001*	

\*Statistically significant  $p \leq 0.05$ , \*\* Mann-Whitney U Test.

Table 5: Awareness towards orthodontic treatment in age wise group of children

Age	Awareness of Dentist/ Orthodontist		Knowledge about irregular teeth		Awareness about braces/ Orthodontic treatment		Knowledge about Orthodontic treatment	
	Mean	S. D	Mean	S. D	Mean	S. D	Mean	S. D
<15	1	0	3	0	1	0	3	0
16-20	3.39	0.85	3.82	1.15	2.69	1.44	5.60	2.33
21-25	3.25	1.06	3.43	1.53	3.10	1.42	5.25	2.81
26-30	2.93	1.38	3	1.55	3.03	1.69	4.8	2.90
>30	2.4	2.19	3.8	2.16	2.6	1.67	5.8	3.76
H value	4.89**		7.08**		5.76**		2.75**	
Sig(2-tailed) test	0.298		0.132		0.217		0.600	

\*Statistically significant  $p \leq 0.05$ , \*\*Kruskal-Wallis Test

From table 4 & 5

Non-parametric tests like Mann-Whitney U test (Table 4) and Kruskal-Wallis test (Table 5) are performed to find out the significance of awareness towards orthodontic treatment among males and females and also among different age groups respectively. The Mann-Whitney U test revealed that there was a significant difference in the knowledge scores related to awareness of Dentist/Orthodontist, Knowledge about irregular teeth and Knowledge about Orthodontic treatment between the subjects of different gender ( $p < 0.001$ ). Kruskal-Wallis test showed that there was no significant difference in the knowledge scores between the subjects with different age groups ( $p \geq 0.05$ ).

### **Discussion**

The present study allowed comparison of awareness towards orthodontic treatment between genders and different age groups by means of a cross-sectional study. According to the statistical analysis, mostly done regarding gender, females showed greater awareness of Dentist/Orthodontist, Knowledge about irregular teeth and Knowledge about Orthodontic treatment than males, whereas males had knowledge regarding irregular teeth compared to females. Also, subjects aged between 16-25 years have more awareness regarding Dentist/Orthodontist, Knowledge about irregular teeth and Knowledge about Orthodontic treatment.

Information about the oral health knowledge among Indian population is still very limited, especially for rural people, who constitute more than 70% of the population. The widespread use of social media could be utilized to advertise and raise awareness about orthodontic treatments such that malocclusion in children could be addressed at an earlier age.

Overall, the finding of this study show an optimum level of awareness and understanding of the problem with positive attitude and behaviour toward the orthodontic treatment among Mandi Gobindgarh population.

### **Conclusion**

Enhancing appearance and improving psychosocial status have been identified as important motivating factors behind the decision to initiate orthodontic treatment. This study revealed that the awareness towards orthodontic treatment and the need to improve the facial aesthetics is more prevalent among the females belonging to Mandi Gobindgarh population. It will increase the demand for orthodontic treatment, as it helps in aesthetics, better oral hygiene, mastication and healthy lifestyle.

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