

Effect of orthodontic treatment needs on oral health related quality of life among the young population in Delhi NCR-region of North India

Tarun Kumar Singh¹, Preeti Bhagia², Utkarsh Gupta³, Deepak Passi⁴,
Jyoti Goyal², Garima Yadav⁵, Bhawna Gautam⁶, Swati Jain⁷

¹Department of Conservative Dentistry and Endodontics, Inderprastha Dental College & Hospital, Ghaziabad,

²Department of Public Health Dentistry, I.T.S Centre for Dental Studies & Research, Muradnagar, Ghaziabad, Uttar Pradesh,

³Department of Public Health Dentistry, Post Graduate Institute of Dental Sciences, Rohtak, Haryana,

⁴Department of Dentistry, Subdivisional Hospital, Ranchi, Jharkhand, ⁵Department of Dentistry, Saraswati Institute of Medical Sciences, Hapur, Uttar Pradesh, ⁶Department of Dental Surgery, Dr. RML Hospital, New Delhi, ⁷Department of Dentistry, ESIC Model Hospital, Indore, Madhya Pradesh, India

ABSTRACT

Aim: To assess the effect of orthodontic treatment needs on oral health-related quality of life among the young people of Delhi NCR. **Methods:** The study was conducted on 12–15 years of individuals attending dental clinic/hospital in Delhi NCR region. Data were collected using Index of Orthodontic Treatment Need -Dental Component and oral health impact profile 14 questionnaire. The Chi-square test was used to analyze the qualitative data. SPSS software version 20 was used for statistical analysis. **Results:** Orthodontic treatment needs had an almost similar impact on the daily activities of both males and females. The sense of taste was not significantly affected by the need for orthodontic treatment in either males or females. The proportions of orthodontic patients found to have the painful arch, embarrassment, tension, and self-conscious both in males and females. **Conclusion:** There is a significant correlation of orthodontic treatment needs among oral health-related quality of life.

Keywords: IOTN, malocclusion, oral health impact profile-14, oral health-related quality of life, orthodontic treatment needs

Introduction

Dental malocclusions display the third most astounding commonness among oral pathologies, second just to tooth decay and periodontal problems, and in this way rank third among the world.^[1] Malocclusion is neither a disease nor a perilous condition yet is for the most part, acknowledged to having physical, social, and mental outcomes that impact the nature of life.

The physical appearance of an individual might be the single variable component that has the best effect on confidence,

standards of conduct, and individual communications. Singular observations, physical and psychosocial capacities, chances to have a typical existence and social communication – these components are basic for assessing the effect of medicinal services benefits on a person.^[2] Young grown-ups are more worried about their conduct, appearance, and view of others about them.

Quality of life is a multidimensional idea that incorporates emotionally apparent physical, mental, and social capacity and also a feeling of abstract well-being.^[3] The term health-related quality of life (HRQoL) has been used to describe an individual's

Address for correspondence: Dr. Garima Yadav,
Department of Dentistry, Saraswati Institute of
Medical Sciences, Hapur, Uttar Pradesh, India.
E-mail: drgarimayadav@gmail.com

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assessment of how the following type of factors affect his or her well-being: experience of pain/discomfort, physical function, psychology (i.e., concerning the person's appearance and self-esteem), and social function, such as interactions with others. When center around orofacial regions, oral health-related quality of life (OHRQoL) is assessed.^[4]

The impact of malocclusions and OHRQoL might be different in children than in adults as they not only deal differently with disease but also with psychological, social, and emotional factors. In addition, children and adult OHRQoL measures are different; thus, they should not be investigated simultaneously. When the focus lies on OHRQoL in children, a variety of instruments exist without one universally accepted. One of the first instruments used in adolescents is the oral health impact profile-14 (OHIP-14).^[5]

Customarily, measures of orthodontic need and result have set generally little accentuation on the patient's view of need and all the more significantly, the distinction that orthodontic care makes to their everyday lives.^[6] It is presently progressively acknowledged that estimation of the oral well-being related personal satisfaction has a critical part to play in clinical practice and should frame some portion of any protection and additionally restorative program proposed to enhance oral well-being.

The scarcity of information on malocclusion in the investigation territory guided to lead the present examination to evaluate the impact of orthodontic treatment needs on OHRQoL among the young people of Delhi NCR.

Methods

A cross-sectional investigation was done from January 2012 to December 2017 in the Registered Hospitals/Clinics of urban area in Delhi National Capital Region. A total of 520 orthodontic patients of age 12–15 years visited the Dental Department of these hospitals were taken into contemplating.

Written consent was taken from the guardians whose wards were incorporated into the investigation. The adolescent whose guardians gave composed assent were incorporated into the investigation. The examination was guided on orthodontic patients to overview the association between orthodontic treatment needs assessed by the dental health component (DHC) of the index of orthodontic treatment need (IOTN) and OHQoL studied by the OHIP-14. Patients who had an apparent requirement for orthodontic treatment and who were about to undergo orthodontic therapy were included. The exclusion criteria were perpetual restorative conditions, past orthodontic treatment, and craniofacial oddities, for example, congenital diseases, cleft lip, palate, and untreated dental caries.

Individuals were clinically inspected for orthodontic treatment require utilizing the dental health component of the IOTN. The information gathered included socio-statistic information, history

of orthodontic treatment, orthodontic treatment required, and the general oral well-being effects of malocclusion on day by day life to obtain accuracy in the use of the IOTN. With a specific end goal to acquire precision in the utilization of the IOTN, the researcher was trained and underwent a calibration exercise. Examiners were calibrated for its use (κ , 8.9).

The individuals were interviewed with utilizing OHIP-14; clinical examinations were led to survey regularizing orthodontic treatment require utilizing the DHC of the IOTN. The treatment needs of the patients were categorized as:

- Grade 1 (no treatment need),
- Grade 2 (little treatment need),
- Grade 3 (borderline need),
- Grade 4 and 5 (high treatment need).

For this study, Grade 1 and Grade 2 were coupled in no or little treatment need; Grade 4 and 5 were coupled as definitive treatment need. The DHC utilizes missing teeth, overjet, cross bite, removals of contact focuses, and overbite to recognize the most serious occlusal characteristic for every patient. The last general score was given to the patient as per the most serious characteristic.^[6]

The OHIP-14 is a 14-things survey intended to quantify self-detailed practical confinement, distress, and inability credited to oral conditions. Responses were made on a 5-point Likert-type scale (never, sometimes, once in a while, frequently, and all the time). The day by day exercises were had issues articulating words, felt that the feeling of taste intensified, had agonizing throbbing in the mouth, have been self-conscious, felt tense, had an unsatisfactory diet, had to interrupt meals, found it difficult to relax, have been somewhat humiliated, have been irritated with other individuals, experienced issues doing helpful employments, felt that life when all is said in done was less attractive, and have been absolutely unfit to work.^[7]

Statistical analysis

Data presentation and statistical analysis were performed with the SPSS statistical package (version 20, SPSS, Chicago, ILL). The Chi-square test was used to analyze the qualitative data. The level of significance was 0.05.

Results

A total of 520 individuals of 12–15 years participated in the study. Table 1 displays the mean and standard deviation for each group in the study. The mean age of males was 13.25 years and female was 12.85 years [Table 1].

Among the 239, i.e., approximately, 46% comprising 111 males and 128 females have definitive treatment need. However, 106 males and 92 females, total 198 (38%) have borderline treatment needs. Approximately, 16% having 43 males and 40 females had no or little treatment needs [Table 2 and Graph 1].

Table 3 shows the impacts on daily activities in relation to gender and orthodontic treatment needs. The Chi-square test participates show that sense of taste and difficulty in doing useful jobs were not significantly affected by the need for orthodontic treatment in both males and females. Rest daily activities were some way affected by the need for orthodontic treatment.

In the psychological domain, a majority of females i.e., 101 out of 128 felt self-conscious because of their teeth as compared to 91 of males requiring definitive treatment need [Graph 2]. Females with definitive treatment needs were found to be more tense because of their teeth as compared to males. Both males and females with “definitive treatment need” were found to be irritated with other people because of problems with their teeth. Trouble in pronunciations of words was also correlated to the orthodontic treatment needs.

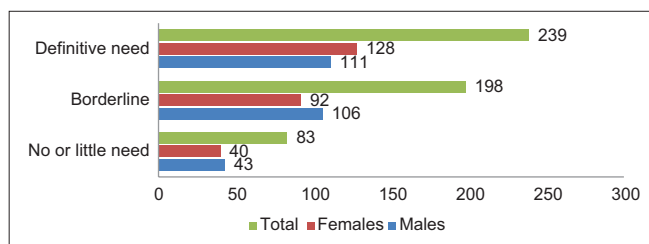
The parameters of physical pain domain were found to be significantly affected by treatment needs.

According to Table 4, embarrassment because of the problem with teeth was associated with both male and female with orthodontic treatment needs. There was no significant relation seen among dietary component with treatment needs.

Table 5 shows a significant correlation among females with the feeling of less satisfaction and unable to function because of problems with teeth with orthodontic treatment needs. There was no significance seen with males.

Parameters	Males	Females
Number	260	260
Age (in years)	Mean	13.25
	SD	1.0988
		12.85
		1.0576

Grade	Males	Females	Total
Orthodontic treatment needs			
No or little need	43	40	83 (15.96%)
Borderline	106	92	198 (38.07%)
Definitive need	111	128	239 (45.96%)



Graph 1: Distribution of orthodontic treatment need among study population

Discussion

This examination assessed the impact of orthodontic treatment needs on oral health related personal satisfaction among the youngsters of Delhi NCR region. Because the subject’s recognition is integral to the appraisal of by and large need and fulfillment with treatment, it is imperative to set up what the patients’ discernments are.

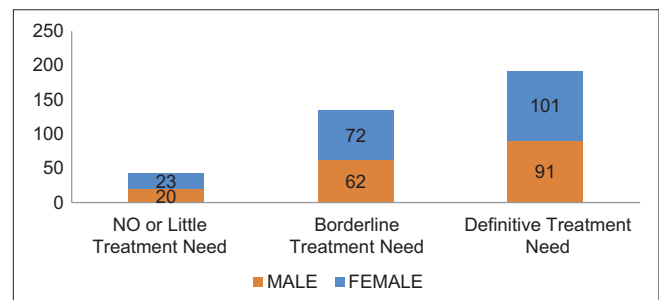
The OHIP is a broadly used instrument for the appraisal of OHQoL. The first form of the scale incorporates 49 things partitioned into 7 areas. A short type of the OHIP containing just 14 things (OHIP-14) has been produced. The OHIP is intended to decide the impression of the social effect of the oral issue and has all around archived psychometric properties.^[7]

The examination uncovers that female was more worried about their orthodontic treatment. Female was altogether felt incapacitate as they had the sentiment of less fulfillment and unfit to work because of an issue in teeth as the contrast with male partner. This may recommend that females are reacting to social desires for the significance of style instead of a dispassionately more prominent orthodontic treatment required in contrast with their male partners.^[8]

However, parents might be more inclined to look for orthodontic treatment for their female youngsters than their male. It was normal that the effect of malocclusion on personal satisfaction would be fundamentally more noteworthy in the young female when contrasted with the young male.^[9]

Young women were more likely to have had a higher dental impact than male youths, but the difference was not that much significant. Similar findings were reported by Oliveira and Sheiham in adolescents and other age groups by Birkeland *et al.*,^[10] Hunt *et al.*,^[11] and Bernabe *et al.*^[12] However, Peres *et al.* found female’s adolescents had greater dissatisfaction with their dental appearance.^[13]

In both male and female patients, the need for orthodontic treatment significantly affected painful aching mouth, embarrassment, and feeling tensed. This finding is in agreement with Klages *et al.*^[14] and Hassan AH.^[15] Klages *et al.* discussed that young adults with more severe malocclusion acquired higher



Graph 2: Distribution of study population on basis of psychological domain and orthodontic treatment need

Table 3: The impacts on daily activities in relation to gender and orthodontic treatment needs

Functional	Response	NO or Little Treatment Need 83		Borderline Treatment Need 198		Definitive Treatment Need 239		χ^2, P	
		Male (43)	Female (40)	Male (106)	Female (92)	Male (111)	Female (128)	Male (260)	Female (260)
		Have you had trouble pronouncing any words because of problems with your teeth, mouth or dentures?	YES	11	10	82	62	82	84
	NO	32	30	24	30	29	44	<0.00001*	< 0.00001*
Have you felt that your sense of taste has worsened because of problems with your teeth, mouth or dentures?	YES	04	08	24	22	30	46	5.629	5.688
	NO	39	32	82	70	81	82	0.0599	0.0581
PHYSICAL PAIN									
Have you had painful aching in your mouth?	YES	10	12	32	68	78	96	45.9203	37.562
	NO	33	31	74	24	33	32	<0.00001*	<0.00001*
Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth or dentures?	YES	10	11	88	60	107	97	86.277	36.737
	NO	33	32	18	32	10	31	<0.00001*	< 0.00001*
Psychological discomfort	Response	NO or Little Treatment Need 83		Borderline Treatment Need 198		Definitive Treatment Need 239		χ^2, P	
		Male (43)	Female (40)	Male (106)	Female (92)	Male (111)	Female (128)	Male (260)	Female (260)
Have you been self-conscious because of your teeth, mouth or dentures?	YES	20	23	62	72	91	101	22.720	8.160
	NO	23	17	44	20	20	27	0.000012*	0.0169*
Have you felt tense because of problems with your teeth, mouth or dentures?	YES	12	10	59	72	92	109	43.833	58.252
	NO	31	30	47	20	19	19	<0.00001*	<0.00001*
Social disability									
Have you been a bit irritable with other people because of problems with your teeth, mouth or dentures?	YES	4	10	52	42	99	91	88.0138	31.188
	NO	39	30	44	50	12	37	<0.00001*	<0.00001*
Have you had difficulty doing your usual jobs because of problems with your teeth, mouth or dentures?	YES	5	12	26	30	31	58	4.580	5.080
	NO	38	28	81	62	80	70	0.1012	0.0897

Table 4: Correlation with Psychological disability and Physical disability

Psychological disability	Response	NO or Little Treatment Need 83		Borderline Treatment Need 198		Definitive Treatment Need 239		χ^2, P	
		Male (43)	Female (40)	Male (106)	Female (92)	Male (111)	Female (128)	Male (260)	Female (260)
		Have you found it difficult to relax because of problems with your teeth, mouth or dentures?	YES	10	7	17	24	30	37
	NO	33	33	89	68	81	91	0.14378	0.358
Have you been a bit embarrassed because of problems with your teeth, mouth or dentures?	YES	15	11	20	28	52	72	19.111	19.040
	NO	28	29	86	64	59	56	.000071*	0.000073*
PHYSICAL DISABILITY									
Has your diet been unsatisfactory because of problems with your teeth, mouth or dentures?	YES	2	11	14	20	20	47	4.7034	5.8602
	NO	41	29	92	72	91	81	.0952	.05339
Have you had to interrupt meals because of problems with your teeth, mouth or dentures?	YES	2	9	10	18	11	30	1.1396	0.4781
	NO	40	31	96	74	100	98	0.565634	0.787377

Table 5: The impacts of handicap OHIP domain in relation to gender and orthodontic treatment needs

HANDICAP	Response	No or little treatment need		Borderline treatment need 198		Definitive treatment need 239		χ^2, P	
		Male (43)	Female (40)	Male (106)	Female (92)	Male (111)	Female (128)	Male (260)	Female (260)
		Have you felt that life in general was less satisfying because of problems with your teeth, mouth or dentures?	YES	11	7	28	31	39	56
	NO	32	33	78	61	72	72	0.295	0.008*
Have you been totally unable to function because of problems with your teeth, mouth or dentures?	YES	08	07	18	08	29	40	2.919	16.704
	NO	35	33	88	84	82	88	0.232	0.002*

scores in self-consciousness domain, which means increased feeling of embarrassment and self-consciousness.^[14]

Helm *et al.* reported that self-consciousness and embarrassment because of severe malocclusion were not limited to adolescents and were seen in adults as well.^[16] However, studies by Lazaridou-Terzoudi *et al.*^[17] and DiBiase^[18] found no significant association between malocclusion and self-consciousness or embarrassment.

The present investigation additionally demonstrated that orthodontic treatment requires influence on the pronunciation of words. This finding was in comparison with that of different analysts.^[19] These outcomes are not in accordance with the after effects of an investigation by Hassan AH.^[15] The physical disability including diet unsatisfaction and interruption of diet were not influenced by orthodontic needs in both genders. This finding was rather than those of Owen S.^[20] This outcome was likewise do not agree with the discoveries of cross-sectional investigations by English JD *et al.* and Magalhães IB *et al.* They expressed that malocclusion can influence the eating regimen and rumination of patients.^[21,22]

Embarrassment and the general feeling of irritation with other individuals were essentially connected with higher orthodontic treatment needs in both male and females in our investigation.^[23] Further, orthodontic treatment needs did not altogether influence the capacity of the patients to carry out their employment and discovered hard to relax.^[24] Therefore, our findings are also relevant for health education and policy decisions, especially in representing the patient's perspective. Finally, this study helps understanding the importance of OHIP as outcome measure in the orthodontic practice as well as health service research.

Conclusion

Orthodontic treatment needs were related to OHRQoL among young people. Oral well-being related personal satisfaction measures epitomize more parts of people's recognition about their mouths and teeth. Surveying personal satisfaction as it identifies with patients' oral health when treatment makes it conceivable to altogether enhance the dental specialist unique relationship and, particularly, to accomplish more effective treatment results.

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Conflicts of interest

There are no conflicts of interest.

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