

Orthodontic Treatment Knowledge among General Dentists and Non-orthodontic Specialists

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ABSTRACT

Introduction: General dentists and specialists other than orthodontist may encounter patient requiring orthodontic treatment. For proper counseling and referral, it is important that general dentists and non-orthodontic specialists have adequate level of orthodontic knowledge.

Objective: To assess the knowledge of orthodontic treatment among general dentists and non-orthodontic specialists and to compare the knowledge between the two groups.

Materials & Method: A descriptive cross sectional study using questionnaire was performed among 185 actively practicing general dentists and non-orthodontic specialists of Nepal. The questionnaire comprised of three parts. The first part included demographic details, second part contained 5 multiple choice questions regarding orthodontic counseling and third part integrated 18 questions for evaluating knowledge of orthodontic treatment. Each correct answer was given score 1 and every incorrect answer was scored zero in the third part of the questionnaire.

Result: Among total participants, 60.5% think first orthodontic evaluation of a child should be carried out within 7 to 8 years of age and 44.3% think orthodontic treatment can even be started after 40 years of age. Around 66% of the participants think that orthodontic treatment cannot be performed in periodontally compromised cases. No significant difference was found between the mean scores of knowledge among general dentists and non-orthodontic specialists ($p=0.891$), or among dentists with different years of experience ($p=0.644$).

Conclusion: There is a need for more education of orthodontic treatment concepts to the dentists who do not belong to orthodontic field for proper counseling and referral.

Keywords: General dentist, malocclusion, non-orthodontic specialist, orthodontist

INTRODUCTION

Malocclusion is the second most common dental disease after dental caries in children and young adults. It is the most commonly recognized etiology for the advancement of dental caries, temporomandibular dysfunctions, gingival and periodontal pathologies.¹ Furthermore, malocclusion can result social embarrassment, rejection and inevitable psychological disorders.^{2,3} Orthodontic care performed after the professional evaluation or patient self-awareness results in beneficial effects, including aesthetic enhancement, functional improvement, and psychosocial well-being.³⁻⁵

General public should be aware about cause, consequences and the benefits of orthodontic treatment.⁴ This can be accomplished by a multi-disciplinary approach in which general dental

practitioners and other non-orthodontic specialists can play the role of orthodontic health educators. Possible differences in educational training, perception of orthodontic treatment need may differ by dentist group or specialty affiliation.^{6,7} Sometimes, patient might present with complain that they cannot correlate with the underlying malocclusion. In such case, it is essential for a dentist to identify and diagnose the orthodontic cause and advice for a referral.⁸

Therefore, there is a need to identify the knowledge level of general dental practitioners and non-orthodontist specialists with respect to the orthodontic treatment. The objective of the study was to assess the knowledge of orthodontic treatment among general dentists and non-orthodontic specialists and to compare the knowledge of orthodontic treatment between the two groups.

MATERIALS AND METHOD

Present study is a descriptive cross sectional study carried out among general dentists and non-orthodontic specialist working in different institutions and dental clinics of Nepal. The ethical approval was taken from Institutional Review Committee of Kantipur Dental College. The study was carried out from January 2018 to March 2018. A written consent was taken from every participant of the study.

This is a questionnaire based study. The questionnaire was developed with reference to different studies.^{3,5,6,9} The questionnaire was first validated by pre-test. The questionnaire comprised of three parts with a total of twenty three questions. First part included demographic details, second part contained 5 multiple choice questions regarding orthodontic counseling and third part integrated 18 questions for evaluating knowledge on orthodontic treatment. The third part had yes or no as answers, each correct answer was scored 1 and every incorrect answer was scored zero. The individual scores were summed up to obtain the total score.

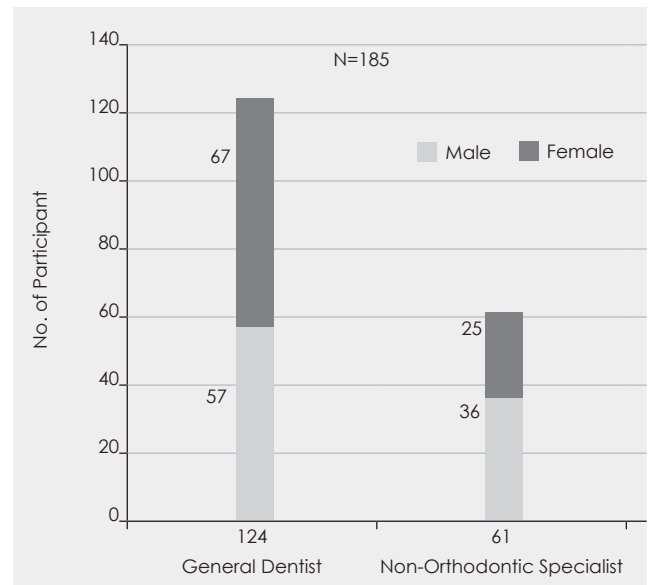
Dental surgeons and non-orthodontic specialists who are actively involved in providing oral health care in hospitals and private clinics were included in the study. Dentists who are not presently practicing dentistry were excluded from the study.

Questionnaire were distributed to 225 participants (approximately 25% of active dentist in Nepal).¹⁰ The questionnaires was distributed proportionately among general dentists and non-orthodontic specialists into 2:1 ratio. Excluding non-respondents, total filled questionnaires collected was 185. The study group was then divided into two groups. Group I comprised of general dentists and Group II included non-orthodontic specialists with a master degree in any subject of dentistry other than orthodontics.

Statistical analysis was done using IBM SPSS software version 21. Mann-Whitney U test and Kruskal-Wallis test were performed as the data were not normally distributed. Significance level was set at $p \leq 0.05$.

RESULT

The study population included 185 total participants out of which 124 were general dentists and 61 were non-orthodontic specialists. Among them 92 were male and 93 were female. 31% of the participants had experience of 2 years or less, 40% had experience of 2-6 years and 29% had greater than 6 years of experience. Frequency distribution of participants according to qualification is given in Figure 1.



While evaluating the knowledge on orthodontic treatment for counseling of the patients, 60.5% of the participants think first orthodontic evaluation of a child should be carried out within 7 to 8 years of age. 44.3% of the participants think that orthodontic treatment can be started after 40 years of age. 88.1% of the participants think that average duration of the orthodontic treatment is 2-3 years. 47% think that retainer should be worn for 6-12 months after orthodontic treatment. 83.2% participants think that only tipping movement can be achieved by the removable appliance (Table 1).

Table 1: Responses on questions regarding orthodontic counseling

Classification of participants	Response	Frequency
When should first orthodontic evaluation of a child be performed?	7-8 years*	60.5%
	10-12 years	36.2%
	15-16 years	3.3%
What is maximum age that orthodontic treatment can be carried out?	25-30 years	22.7%
	35-40 years	33.0%
	>40 years*	44.3%
What is average orthodontic treatment duration time?	2-3 years*	88.1%
	3-4 years	10.3%
	>4 years	1.6%
How long retainers are to be worn after orthodontic treatment?	0-6 months	13.5%
	6-12 months*	47.0%
	12-18 months	39.5%
Cases that can be treated with removable appliances requires which type of tooth movement?	Tipping*	83.3%
	Translation	3.2%
	Both	13.5%

*most appropriate answer

Table 2 depicts the knowledge assessment of the participants in relation to the orthodontic treatment. The response to 18 questions in the third section was sought in yes or no dichotomous answers. Each correct answers

was given score 1 and incorrect answer was scored as 0. The individual scores were summed up to obtain the total score, maximum obtainable score being 18.

Table 2: Knowledge assessment of participants

SN	Question	Response	Qualification		Gender		Experience		
			General Dentists	Specialists (non-ortho)	Male	Female	<2 yr	2-6 yr	>6 yr
1	Can ortho treatment be done in mixed dentition?	Yes	93	47	72	68	38	59	43
		No	31	14	21	24	19	15	11
2	Do functional appliances have advantages?	Yes	111	58	86	83	48	71	50
		No	13	3	7	9	9	3	4
3	Does ortho treatment always require extraction?	Yes	5	2	5	2	2	2	3
		No	119	59	88	90	55	72	51
4	Does malocclusion induce TMJ disorder?	Yes	120	58	88	90	56	73	49
		No	4	3	5	2	1	1	5
5	Does malocclusion create perio complications?	Yes	119	58	89	88	57	73	47
		No	5	3	4	4	0	1	7
6	Can miniscrews be used for anchorage?	Yes	90	50	75	65	41	57	42
		No	34	11	18	27	16	17	12
7	Is retainer necessary after every ortho treatment?	Yes	91	47	61	77	49	49	40
		No	33	14	32	15	8	25	14
8	Do differences exist in adult and adolescent orthodontics?	Yes	109	58	87	80	49	70	48
		No	15	3	6	12	8	4	6
9	Is there different treatment timings for boys and girls?	Yes	99	41	67	73	46	59	35
		No	25	20	26	19	11	15	19
10	Can timely intervention prevent orthognathic surgery?	Yes	108	54	78	84	52	66	44
		No	16	7	15	8	5	8	10
11	Should every ortho treatment be done by fixed appliances?	Yes	21	11	15	17	8	13	11
		No	103	50	78	75	49	61	43
12	Can ortho treatment be done in perio-compromised cases?	Yes	40	22	34	28	22	19	21
		No	84	39	59	64	35	55	33
13	Can certain TMJ disorder be cured by ortho treatment?	Yes	116	57	88	85	54	72	47
		No	8	4	5	7	3	2	7
14	Can every malocclusion be treated with lingual braces?	Yes	22	11	14	73	11	9	13
		No	102	50	79	19	46	65	41
15	Can every malocclusion be treated with ceramic braces?	Yes	27	19	22	68	14	18	14
		No	97	42	71	24	43	56	40
16	Can every malocclusion be treated with clear aligners?	Yes	57	24	41	40	26	36	19
		No	67	37	52	52	31	38	35
17	Can ortho treatment be done in missing molar cases?	Yes	115	55	85	85	52	70	48
		No	9	6	8	7	5	4	6
18	Can ortho treatment be done in special health care needs?	Yes	63	36	54	45	33	30	36
		No	61	25	39	47	24	44	18

Table 3: Comparison of knowledge and distribution according to group

Classification of participants		N	Knowledge score (mean±SD)	p-Value	Grade		
					Poor	Fair	Good
Qualification	General dentists	124	13.74±2.32	0.891 NS	2	30	92
	Specialists (non-ortho)	61	13.87±1.75		0	13	48
Gender	Male	93	14.01±2.13	0.123 NS	1	18	74
	Female	92	13.55±2.14		1	25	66
Experience	< 2 years	57	13.68±1.91	0.644 NS	0	17	40
	2-6 years	74	14.00±1.84		0	16	58
	> 6 years	54	13.59±2.69		2	10	42
Total		185	13.78±2.14	-	2 (1.08%)	43 (23.24%)	140 (75.68%)

NS, Not significant

Mean score of knowledge among general dentists was 13.74±2.32. Mean score of knowledge among non-orthodontic specialist was 13.87±1.75. There was no significant difference between the mean score of knowledge among general dentists and non-orthodontic specialists ($p=0.891$) (Table 3).

In the present study, the mean score of knowledge was also evaluated by categorizing it in three grades. Mean score 0 to 6 was given poor, mean score 6.1 to 12 was given fair and mean score 12.1 to 18 was good. Distribution in different grades is given in Table 3.

DISCUSSION

While evaluating the perception of the orthodontic treatment for the counseling of the patients, Table 1 shows that most of the general dentists and the non-orthodontic specialists were aware of the basic concept of the orthodontic treatment. However, around 40% of the participants aren't aware that first orthodontic evaluation should be done around 7-8 years and around 55% think that orthodontic treatment cannot be performed after 40 years. This lack of knowledge is very vital for the patient counseling and referral at the correct age for the optimal outcome of the orthodontic treatment. This shows the need for increased in clinically oriented education of practice and concepts of orthodontic treatment.

There was no significant difference between the mean score of knowledge among general dentists and non-orthodontic specialists ($p=0.891$). In a similar study done to assess the knowledge of principle and practice of orthodontic treatment among general dentists and non-orthodontics specialists, the mean score of knowledge

was found 8.87 and 10.24 respectively.⁸ In this study, the mean score of knowledge in general dentists and non-orthodontic specialist was 13.74 and 13.87 respectively. The difference in mean knowledge was due to difference in number of questions asked and scoring pattern. Another study done by Niveda and Dinesh in Chennai, India on a similar study sample, the knowledge and awareness prevalent among the study participants was found to be moderately satisfactory.⁹

In contrast to the present study, study done by Kapoor *et al.* have shown statistically significant knowledge and attitude difference between general dentists and non-orthodontic specialists.⁸ Similarly, Sastri *et al.* showed that the scores were more for the non-orthodontic specialists and the difference was statistically significant.⁶ In another study done in Saudi Arabia, when the scores of knowledge were compared between general dental practitioner and non-orthodontic specialties, a statistically significant difference was noted.¹

Table 2 shows that approximately 96% of the participant think that malocclusion can create periodontal complication and can cause temporomandibular disorders. Around 93.5% think that certain temporomandibular joint disorders can be cured by orthodontic treatment, whereas 66.48% of the participants think that orthodontic treatment cannot be performed in periodontally compromised cases. Around 53.51% of the participants think that orthodontic treatment can be done in special health care need patient. Study done by Alshammery *et al.* also showed that dentist and specialists other than orthodontists are moderately aware about orthodontic treatment in medically compromised patient.¹¹

The present study highlights the need of better education of treatment concepts in orthodontics to the dentists who do not belong to this specialized field.

CONCLUSION

Around 25% of the participant had poor or fair orthodontic knowledge. The other 75% though classified as having good orthodontic knowledge had mean score towards lower limit of the range for good category. Hence, the present result suggests that the existing knowledge and approach of general dentists as well as non-orthodontic specialists towards orthodontic treatment should be improved. Syllabus of under graduation orthodontics should include more emphasis on therapeutic concepts to fulfill this knowledge gap. Continuing Dental Education (CDE) programs can be helpful for general dentists and non-orthodontic specialists to upgrade their knowledge of orthodontic treatment which in turn will result in proper counseling and referral.

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