

Attitude and Knowledge of Orthodontics among General Dentists and Non-Orthodontic Specialists: A Questionnaire Based Survey

Research Article

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Abstract

Aim: This study aimed to assessing orthodontic knowledge and attitude among general dentists and non-orthodontic specialists.

Background: Early detection of orthodontic disorders is essential in motivating patients to intervene prior to long term complications when the disorders are not recognised.

Methods: A questionnaire was distributed amongst dentists other than orthodontists. This questionnaire consisted of three sections. The first one aimed to collect demographic, educational level and practice type information. Further two sections consisted of closed-end questions designed to evaluate knowledge and attitude of orthodontics.

Results: A total of 313 responses to the survey were submitted. No significant correlation was observed, except for the specialty and qualification towards orthodontics knowledge. In terms of gender demographics, females had significantly higher attitude toward orthodontics compared to males.

Conclusion: The results emphasise the vital role of continuing education programs and updating the curricula of dental colleges in the promotion of knowledge and attitude toward orthodontics among dentists.

Clinical Significance: Knowledge and attitude of general practitioners and non-orthodontic specialists toward orthodontic issues is crucial in diagnosis and referral to receive proper treatment at early stages.

Keywords: Orthodontics; Knowledge; Attitude; Dentists.

Introduction

Malocclusion is the abnormality of eruption process of permanent or deciduous teeth in jaws, considered to being one of the most important factors, next to dental caries that causes significant oral pathology. Examples include tooth decay, defects in the temporomandibular joint and gingival diseases. Beside the psychological effect of people who suffer from defects in the appearance of the teeth that may negatively impact his/her social life [1-4]. Orthodontics is the treatment option that corrects these issues which arise from alteration in morphogenesis and physiology of dentofacial apparatus over time [5]. The awareness and benefits of orthodontic treatments among patients is significant

in changing attitudes and enhancing the outcomes of orthodontic therapies [6]. The task of educating the patient lies largely upon the dentists who do not have a specialist knowledge in orthodontics. Their role is important in identifying the patient who needs to undergo a correction in dental occlusion or other orthodontic-related treatments [7]. Assessing the knowledge of dentists in orthodontics is necessary to ensure that they are able to diagnose any problems in patients and they are subsequently referred to orthodontic specialists for treatment [8].

The aim of this study was to evaluate the knowledge and attitude towards orthodontics among dentists and non-orthodontic specialists.

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Material and Method

Study design

This study was a cross-sectional investigation among general practitioners and non-orthodontic specialists working in different institutions and dental clinics. The ethical approval was obtained following Helsinki declaration prior to conducting the survey. The study was carried out from March 2020 to May 2020 during which the questionnaire was distributed via e-mail. Informed consent was obtained from each participant before responding to the questions.

Questionnaire design

The questionnaire template was based on previous study [9]. Sections of the questionnaire used for this study are illustrated in Table 1. The first part of the questionnaire was designed in collecting the demographic and other practice-related information

such as area of work and number of patients treated/day. The second part of the questionnaire (from question No. 1 to No. 13) aimed to assess the knowledge about orthodontic treatment approaches, its effect on facial appearance, diagnosis, components of orthodontic appliances, habits, and the suitable age of orthodontic treatment. The last part (from question No. 14 to No. 20) was designed to evaluate the attitude of the participants about these principles and practice.

The questions were of Yes/No type and each correct answer was given a score 1 and score 0 was given for any incorrect answer. Frequency of correct/incorrect responses were used to assess knowledge and attitude to orthodontics and their association with different variables included in this study.

Statistical analysis

Descriptive statistics was used to express the mean scores and standard deviation. Scores were calculated based on the responses

Table 1. Sections of the questionnaire.

Questionnaire:
Demographic information:
Gender: Male/Female
Age
Year of graduation for the last degrees
Qualification:
Specialty:
How many patients do you treat per day as average
Area of work:
Questions of knowledge about principles and practice of orthodontic treatment (Yes/No type questions):
1. What is the suitable age for starting orthodontics treatment?
2. Can malocclusions be treated during mixed dentition stage?
3. Do you consider that well-aligned teeth are important for overall facial appearance?
4. Do you aware of functional therapy?
5. Do you know that functional appliance gives a better result when advised during pre-pubertal growth spurt period?
6. Do you consider skeletal malocclusions when patients report to you with a complaint of incompetent lips and proclined teeth?
7. Are you aware that few teeth may have to be removed for aligning irregular teeth?
8. Is orthodontic treatment always requiring extraction? (N)
9. Do habits like mouth breathing or thumb-sucking has an effect on the front teeth alignment?
10. Do you believe that straightening the teeth makes better smile, helps in mastication, better oral hygiene, easier to speak, healthy lifestyle?
11. Do you know that temporomandibular joint disorders can be cured by orthodontic therapy?
12. Do you aware of the fact that mini screws can replace molars for anchorage?
13. Should retainers be worn after fixed appliance therapy?
Questions of Attitude about principles and practice of orthodontic treatment (Yes/No type questions):
14. Do you advise the patient for the orthodontic treatment?
15. Do you call specialist (orthodontist) for an opinion?
16. Do you carry out diagnostic orthodontic procedures?
17. Do you tell your patients to come for orthodontic treatment only after eruption of all permanent teeth? (N)
18. Do you always look for malocclusions on clinical examination when patients report with any other complaint?
19. Do you deny orthodontic treatment for patients with missing molar? (N)
20. Do you know about the orthognathic surgeries?

given by participants and the individual scores were summed up to calculate the number of correct/incorrect answers. Inferential analysis was performed by using Linear regression and Pearson's correlation coefficient (r), strength of association for attitude and knowledge with different variables was calculated by Chi-square test. Significant level was set at $p < 0.05$. Statistical analysis was done using SPSS software (Version 21, IBM, USA).

Results

Responses from 313 dentists were analysed. Descriptions of all variables included in this study were summarized in Table 2. According to the knowledge section, the positive responses were the highest for the ninth question, which included the effect of bad habits on aligning the teeth. The lowest number of positive responses was knowing the appropriate age to start the orthodon-

tic treatment (first question). Within the attitude section, most of the participants were advising patients to choose orthodontic treatment (question 14) with less than half of the dentists (133) indicating that they had not performed any checks on orthodontic problems (question 16) (Figure 1). Regression analysis was used to test the relation of these variables with the level of knowledge and attitude of the dentists towards orthodontic treatment. Among all independent variables entered only qualification and specialty remained as significant predictors of the knowledge and the gender as predictor of the attitude Table 3. Both qualification and specialty showed significant and positive correlation with the level of knowledge about orthodontic treatment Table 4. Gender was shown to have a positively significant correlation with the attitude towards orthodontics Table 5. Further analysis for association for these predictors showed that dentists with higher degrees have higher knowledge compared to bachelor degrees (OR

Table 2. Descriptive statistics of the independent variables.

Variables	Mean \pm SD	Range
Age (Year)	32.3 \pm 7.9	22-67
Years of experience	7.1 \pm 6.1	1-35
Number of patients per day	6.4 \pm 6.3	1-40
Gender	n, %	
Female	185, 59.1	
Male	128, 40.9	
Qualification		
BDS	197, 62.9	
Higher degree	116, 37.1	
Speciality		
General practitioner	188, 60.1	
Specialist	125, 39.9	
Work place		
Health sector	252, 80.5	
Academia	61, 19.5	
Total, %	313, 100	

Table 3. Predictors of the knowledge and the attitude of the dentists towards orthodontic treatment.

Methods	Entered variables	Predictors	
		Knowledge	Attitude
Backward linear regression	Age, patients per day, qualification, gender, years of experience, work place, speciality	Speciality, qualification	Gender

Table 4. Regression analysis of the knowledge of orthodontic treatment section.

Variable	Correlation coefficient [§]	p value*
Gender	-0.043	0.22
Age	0.007	0.44
Qualification	0.404	0.03
Speciality	0.3	0.04
Years of experience	-0.043	0.22
Place of work	-0.005	0.46
Patients per day	-0.012	0.41

§ Pearson's correlation coefficient (r) * Significance at $p < 0.05$

Table 5. Regression analysis of the attitude of orthodontic treatment section.

Variable	Correlation coefficient [§]	p value*
Gender	0.33	0.01
Age	0.064	0.13
Qualification	0.052	0.18
Speciality	0.035	0.27
Years of experience	0.039	0.24
Place of work	0.016	0.39
Patients per day	0.076	0.09

§Pearson’s correlation coefficient (r)

* Significance at p< 0.05

Figure 1. Responses to questions related to the knowledge about orthodontics showed that the highest positive response was associated with question #9 in which 311 dentists confirmed the effect of bad habits on alignment of the teeth. The lowest number of correct answers was about the suitable age for starting orthodontic treatment (question #1) (A). Regarding attitude towards orthodontic treatment, majority of dentists advised their patients for orthodontic treatment (question #14), while 133 dentists reported that they do not carry any type of diagnosis for orthodontic problems (B).

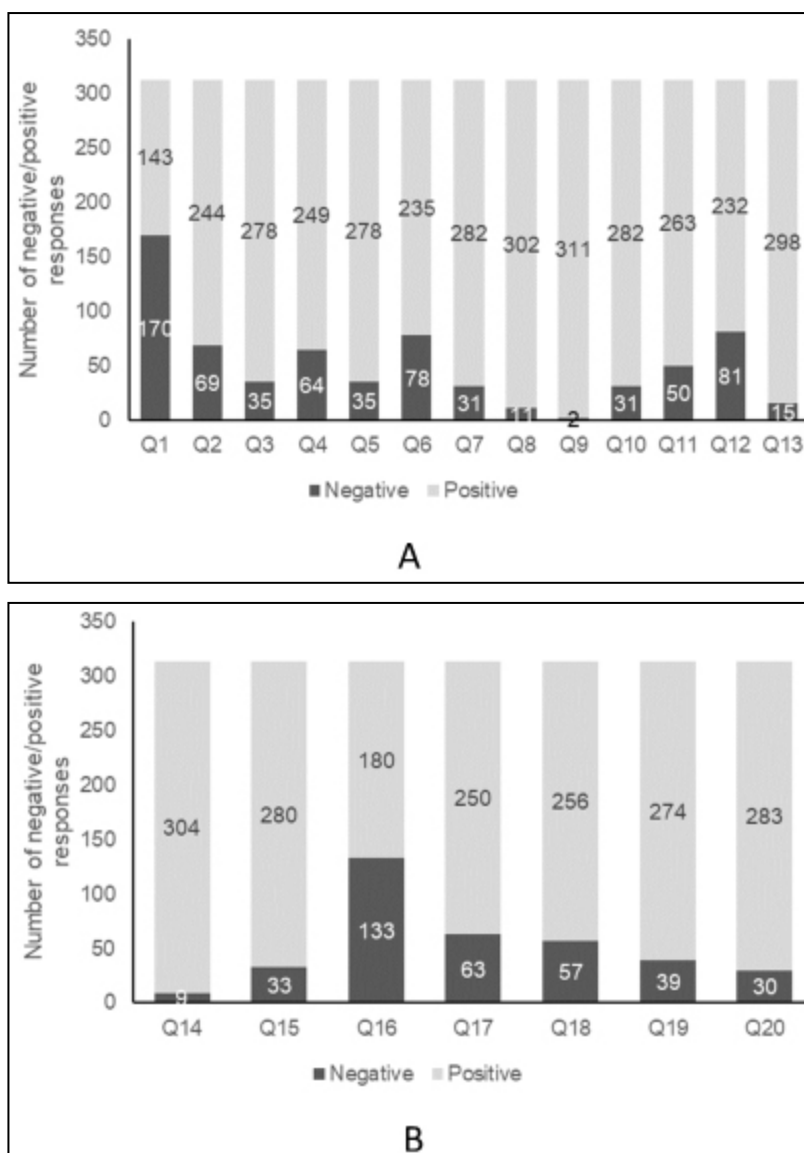


Table 6. Association of the predictors with knowledge and attitude towards orthodontic treatment.

Variables	Response (n, %)		OR§	p value*
	Positive	Negative		
1- Knowledge				
Qualification				
BDS	2114, 82.5	447, 17.5		0.035
Higher degree	1283, 85.1	225, 14.9	1.206	
Speciality				
General practitioner	2017, 82.5	427, 17.5		0.043
Specialist	1380, 84.9	245, 15.1	1.192	
2- Attitude				
Gender				
Male	727, 81.1	169, 18.9		0.019
Female	1100, 85	195, 15	1.311	

§ Odds ratio at 95% confidence interval

* Significance at $p < 0.05$ using Chi-square test

1.206) holders, with same applied to the specialists as compared to the general practitioners (1.192) Table 6. The attitude towards orthodontic treatment was significantly associated with the female than male counterparts (OR 1.311) Table 6.

Discussion

The results of this study showed that specialty and qualification were significantly correlated with knowledge and the females has higher attitude towards orthodontics. Malocclusion is the most prevalent dental pathology after dental caries that interfere with facial profile and dental appearance [10]. Improvement of dental occlusion by orthodontic treatment could be helpful in enhancing the general face appearance and restoring normal function as much as possible [11, 13]. Therefore, the orthodontic treatment has a key-role in esthetic and psychological aspects.

The degree of understanding of orthodontic treatment and its benefits among the general public largely depends on the degree to which dentists generally know the reasons for orthodontic treatment and the ability to diagnose and refer a patient who needs to consult an orthodontist [14]. Habits such as finger sucking, finger biting and lip sucking have the worst effect on the growth of jaws, teeth position and surrounding tissue which should be obvious to the dentist during examination [15, 16]. Knowledge of the effect that bad habits have on the alignment of the teeth was high among the participants.

The appropriate age for treating an orthodontic problem depends on the severity of the condition, its causes and the expertise of the orthodontist [17]. Several studies mentioned that Early treatment contributes to reducing complications with increasing age and reducing the extent/duration of treatment [18, 19]. The suitable age for treating orthodontic-related problem was not known to half of the participants in the study, this may affect the advice and referral of the patient who suffers from problems in orthodontics and make the treatment take longer [20]. The improvement of skill and knowledge of dentists to diagnose the problems

associated with orthodontic is essential in ensuring the correct referral of a patient to an orthodontist [21], the current study indicated a defect in this aspect among the dentists.

Qualification and specialty showed significant and positive correlation with the level of knowledge about orthodontic treatment. This may be due to the increase in the number of years of experience and the number of patients who were treated before obtaining the qualification or familiarity of other specialists with aspect of orthodontic treatment directly or indirectly interfere with their specialties. These results came in line with other previous studies that showed a significant difference in knowledge toward the orthodontics treatment when comparing general practitioners with those who have specialty other than orthodontic [7-9]. Although some studies find no significant difference when conducting the same comparison [22].

According to gender, the present study showed that females expressed higher attitude than males towards the treatment of malocclusion, similar findings were mentioned in previous studies [23]. The explanation could be that females are more knowledgeable and are more concerned about the appearance, hence females can easily identify defects in the aesthetics of the teeth compared to males, which probably motivate them to gain more knowledge about orthodontics. This finding at the same time differs from other studies which state that males were higher than females in knowledge and attitude about the principles of malocclusion correction [7].

The major limitation of this study is that the degree of attitude and knowledge evaluation of non-orthodontic specialists was based mainly on their theoretical background only and not on clinical experience which alter their judgment on orthodontic treatment. In addition, answers to questions may not represent the actual clinical practice of the respondents. Therefore, generalizability of the current findings to all dental community must be dealt with caution.

Conclusions

The current study showed that most of the respondents have information about orthodontics, but with varying degrees. The qualification of the dentists had the most significant impact on the awareness and referral of the patient to a specialist. Dentists should pay attention to participation in continuous medical education that synchronizes with updates in the field of orthodontics.

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