



Determinant Factors in Orthodontist Selection by the Patient

Shaimaa Fatah^{1*}, Ali Rafighi², Aydin Sohrabi², Parastou Nastarin³

1. Post Graduate Student of Orthodontics, Department of Orthodontics, Tabriz University of Medical Sciences, Tabriz, Iran

2. Associate Professor, Department of Orthodontics, Tabriz University of Medical Sciences, Tabriz, Iran

3. Assistant Professor, Department of Orthodontics, Tabriz University of Medical Sciences, Tabriz, Iran

*Corresponding author: Associate Professor, Department of Orthodontics, Tabriz University of Medical Sciences, Tabriz, Iran Email: ali_rafighi@yahoo.com

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Abstract

Background: Determining the factors involved in selecting a specialist dentist from patient's point of view helps dentists to improve the quality of their services and responds to patients' needs. Therefore, this study is aimed to determine the factors affecting the selection of an orthodontist by individuals.

Methods: In this study, 384 patients who had been referred to the orthodontist office participated. Individuals were interviewed separately using a questionnaire. Data were collected after completing the questionnaire and analyzed using SPSS software version 21.

Results: Findings revealed that the orthodontist's work experience and reputation among the patients (34.1%), their attention and explanation with details to patients (45.6%), referral through another dentist, friends or other patients (46.1%), the good behavior of the staff and the cleanliness of the office (58.1%), the use of non-extraction treatment based on each patient's needs (47.9%) and having a payment plan and low cost of treatment (24.2%) were the most substantial issues and greatest priorities in the decision making process of patients.

Conclusion: Our findings indicated that some of the factors and priorities have a high impact on the selection of dentists. The knowledge of these priorities and reasons for patients to choose a dentist can be used in marketing strategies by dentists.

Keywords: Orthodontist, Patient preferences, Practitioner attributes, Quality of dental services

1. Introduction

The process of selecting orthodontists as specialist dentists by the patients is a very complex procedure. Several indices such as factors related to the provider and recipient of the service and the office environment might affect this choice. Patients might have different choices in different situations and consider various structural, procedural and outcome factors of healthcare providers (1-3). Some of the effective factors in this decision-making process include patients' awareness, cost of services provided, location of the service provider's office, professional reputation of the dentist, special services, insurance coverage and support, office decoration, orthodontist and staff's appearance, advertising on social networks (4-8) and on the other hand, the circumstances of patients such as age, gender,

education level and economic and social status also affect their choices (7).

In the study by Walley et al. the reputation of the dentist was the most important factor along with the level of caring attitude that the office projected. The location of the office was also important to be near patient's home. Furthermore, the payment plan was the main factor in the decision-making process (9). A dental professional's appearance was another effective element in patients' decision to select them. Some studies indicated that this factor leads to a better and more successful relationship (10, 11). For example, dentists who wear suitable attire may provide a professional impression, whereas improper clothing may show inattention and disorganization (12). Souza-Constantino et al. showed that the appearance of the dentist is involved in the choosing of an orthodontist by patients of all

ages. Moreover, participants mostly preferred younger professionals with white coats, because this type of clothing looks clean and hygienic (5).

Numerous issues are involved in attracting patients to the orthodontics office and the different conditions of each society in terms of economic, social and health changes the importance and priority of selecting individuals (13). Identifying the effects of these factors improves the services provided to patients and increases their satisfaction. On the other hand, recognizing the important factors that patients consider in selecting dentists will help health managers improve their services and invest their resources in areas that patients pay more attention to.

Limited studies are available to identify factors influencing orthodontist selection using a complete model. Therefore, the present study was conducted to determine the factors effective in the search for an orthodontist. This study helps specialist dentists to become more familiar with the needs and expectations of patients and to meet these requirements by using appropriate strategies.

2. Methods and materials

This descriptive study was conducted among 384 patients who had been referred to the orthodontist's office in Tabriz. The study protocol was approved by the Research Ethics Committee of the Tabriz University of Medical Sciences, and informed consent was acquired in accordance with the Declaration of Helsinki.

Participants

A total of 512 participants were screened from orthodontic offices in Tabriz from October 2020 to January 2021. Finally, 384 patients enrolled in the five orthodontists' offices that were selected according to the following criteria:

1. The orthodontist must practice in the office for at least 4 working days a week.
2. The orthodontist should be the only practitioner in the process of treatment or be in equal partnership.
3. The orthodontics office should be located in an area where at least two other orthodontists are present.

The exclusion criteria included:

1. Patients' unwillingness to participate in the study
2. Patients who have had at least 3 months of orthodontic treatment

The sample size was determined based on changes in payment plans obtained from the Wally et al.'s study (9). By considering a confidence level of 95%, power of 80%, and a 2-tailed test, the sample size was computed to be 384 patients.

Study design and questionnaire

Each participant (n=384) was interviewed separately using a questionnaire provided by one researcher, who assisted with the process but did not interfere with the participants' answers.

Each of the five orthodontic clinics qualified for the study was provided with the necessary training on how to complete the questionnaire.

The secretary handed over the questionnaires to the patients in the office and in the same session, the patient or one of the parents completed them (when the patient was under 18 years old). Questionnaires were given to patients who had

The questionnaire was taken based on a questionnaire used by Wally et al. that contained

demographic information of the patients (including age, sex, language, education, income, type of insurance coverage and the main family decision maker for selecting an orthodontist) (9). This questionnaire consisted of two sections:

level or the status of his office, which were tailored to each of the options and the respondent and preferences in order of importance.

Section 2: The patient's opinion on the effect of each of the questions in the first part was asked in 5 options (strongly disagree, disagree, have no opinion, agree and strongly agree).

Statistical analysis

Data analysis was accomplished using SPSS software version 21 (SPSS Inc, Chicago, Illinois, United States). Descriptive indices were reported in the form of mean \pm standard deviation for quantitative variables, and frequency (percentage) for qualitative variables.

After translation and cross-cultural adaptation, the face and content validity of the questionnaire were evaluated by ten orthodontists in the field from the dental faculty of Tabriz University of Medical Sciences. The content validity index (CVI) and content validity ratio (CVR) were calculated. Minimum

required amounts of CVR and CVI for each item were 0.62 and 0.79, respectively (14-16).

Internal consistency of the questionnaire was established using Cronbach's alpha coefficient for the subscales. Test-retest reliability was assessed by calculating the intra-class correlation (ICC) coefficient with a two-way random effects model for the questionnaire score using data from 30 participants who had answered the questionnaire a second time after a two week interval. An ICC coefficient higher than 0.6 was considered as acceptable (17).

3. Results

Table 1 shows the baseline characteristics of the patients. The mean age of patients was 24.59 ± 9.91 , 59.6% (n=229) were aged 15-30 years. Moreover, 71.9% (n=276) of participants were women and 74.2% (n=285) were single. In 52.9% (n=203) of cases, patients themselves were responsible for selecting an orthodontist, and in 47.1% (n=181) of patients, the mother, father or both of them were involved in selecting an orthodontist.

Table 2 presents the first two priorities of patients in 7 parameters. The work experience and orthodontist's reputation (34.1%) were the most frequent priorities among the orthodontist's social status priorities. Attention and explanation with details to the patients (45.6%) among the orthodontic personal attribute priorities, other dentist, patients and friends (46.1%) among priorities related to referral sources to the orthodontist were the most substantial ones in the decision-making process. In addition, the first two priorities of 52.6% of the participants regarding

the location of orthodontic office were that the location of the office was not important and that it was close to home. Staff's proper behavior and office cleanliness were the first two priorities of 58.1% of the patients regarding the appearance of the orthodontic office. The most common first two priorities of practice philosophy-related parameters were patient specific and non-extraction treatments (47.9%). Regarding payment structure, it has payment low cost of treatment (24.2%) were most frequent priority.

The percentage of each factors related to the 7 parameters in decision making process from the clients' point of view are shown in Graph 1-7.

Assessment of validity and reliability of questionnaire

Table 3 shows that the minimum and maximum CVR were 0.75 for orthodontist's membership in local scientific societies and 0.97 for the nearness of the orthodontist's office to the home, respectively. Total CVR for the whole questionnaire (average of CVRs of all items) was 0.91.

Moreover, minimum CVI was 0.81, which was related to office interior design and its luxury and maximum CVI was 0.98, which was related to the referral to an orthodontist by another patient. Total CVI (average of CVIs of all items) was 0.91.

Cronbach's alpha for the subscales ranged from 0.75 for the social status of orthodontist to 0.84 for the location of the orthodontist's office, thus indicating acceptable to excellent internal consistency. ICC was used for the assessment of test-retest reliability, which was 0.88-0.97.

Table 1. The baseline characteristics of the patients.

Variables	Frequency	Percentage	
Age (years)	Less than 15 years	65	16/9
	15-30	229	59/6
	30-45	76	19/8
	More than 45 years	14	3/6
Gender	Male	108	28/1
	Female	276	71/9
Marital status	Single	285	74/2
	Married	99	25/8
Orthodontic insurance	Yes	86	22/4
	No	298	77/6
Responsible for choosing an orthodontist	Patient	203	52/9
	Mother	26	6/8
	Father	25	6/5
	Mother & Father	130	33/8

Table 2. The first two priorities of patients.

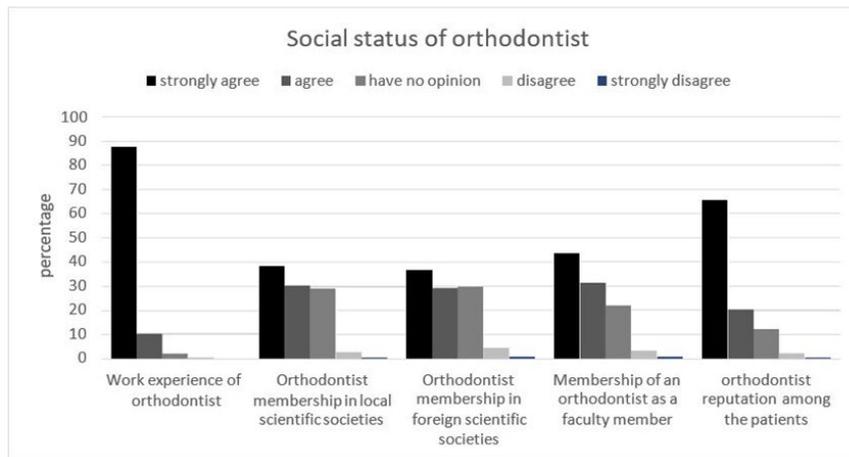
Parameters	Priority	Frequency	Percentage
Social status of orthodontist	1) Background and work experience of the orthodontist	131	34/1
	2) The reputation of the orthodontist among the patients		
Personal attribute of orthodontist	1) Amiability and attention to the patient	175	45/6
	2) Full explanation to the patient about the treatment and its process		
Referral source to the orthodontist	1) Dentist	92	24/0
	2) Patients		
Location of the orthodontist's office	1) Friends or neighbors	85	22/1
	2) Patients		
Appearance of the orthodontist's office	1) Not important	202	52/6
	2) Near home		
Practice philosophy	1) Appropriate behavior of office staff	223	58/1
	2) Office cleanliness		
Payment structure	1) Patient specific	184	47/9
	2) Non-extraction		
	1) Has payment plan	93	24/2
	2) Low cost of treatment		

Table 3. Validity and reliability of the questionnaire.

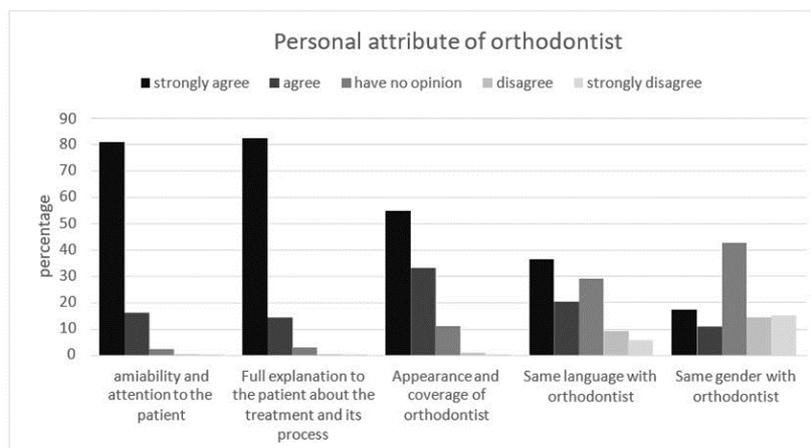
Factors	Questionnaire items	CVR	CVI	Cronbach's alpha
Social status of the orthodontist	The orthodontist's work experience has influenced your choice	0.95	0.89	0.75
	Orthodontist's membership in local scientific societies has been influential in your choice	0.75	0.92	
	Orthodontist's membership in foreign scientific societies has been influential in your choice	0.91	0.85	
	The membership of the orthodontist as a faculty member has been influential in your choice	0.81	0.89	
	The reputation of the orthodontist among the clients has been influential in your choice	0.9	0.91	
Personal characteristics of the orthodontist	The orthodontist's kindness and attention to the client in the visit session has been effective in your choice	0.91	0.94	0.79
	A complete explanation to the client about the treatment and its process has been effective in your choice	0.83	0.89	
	The appearance and clothing of the orthodontist has been influential in your select	0.77	0.87	
	The orthodontist's language has been influential in your selection	0.76	0.87	
	Homosexuality of the orthodontist has been influential in your select	0.88	0.86	
Who introduces and refers you to an orthodontist	The introduction of an orthodontist by another dentist has been influential in your choice	0.89	0.88	0.76
	The introduction of an orthodontist by another client has been effective in your selection	0.85	0.98	
	The introduction of an orthodontist by the insurance or grant organization has been influential in your selection	0.82	0.84	
	The introduction of an orthodontist by a friend, acquaintance or family member has been influential in your selection	0.94	0.97	
	Familiarity with the orthodontist through social media ads, magazines and distribution of advertising tracts has been effective in your selection	0.75	0.88	
Location of the orthodontist's office	The proximity of the orthodontist's office to your place of residence has influenced your selection	0.97	0.93	0.84
	The proximity of the orthodontist's office to your workplace has influenced your selection	0.91	0.9	
	The proximity of the orthodontist's office to the school or extracurricular classes has been influential in your selection	0.87	0.85	
	The location of the office did not affect your selection	0.89	0.87	
Physical conditions of the orthodontist's office	The size of the office and the presence of a large waiting room have been influential in your selection	0.79	0.87	0.81
	The interior design of the office and its luxury have been effective in your selection	0.83	0.81	
	The cleanliness of the office has been influential in your selection	0.94	0.97	
	The attitude of the office staff has been influential in your choice	0.96	0.89	

Table 3. Validity and reliability of the questionnaire.

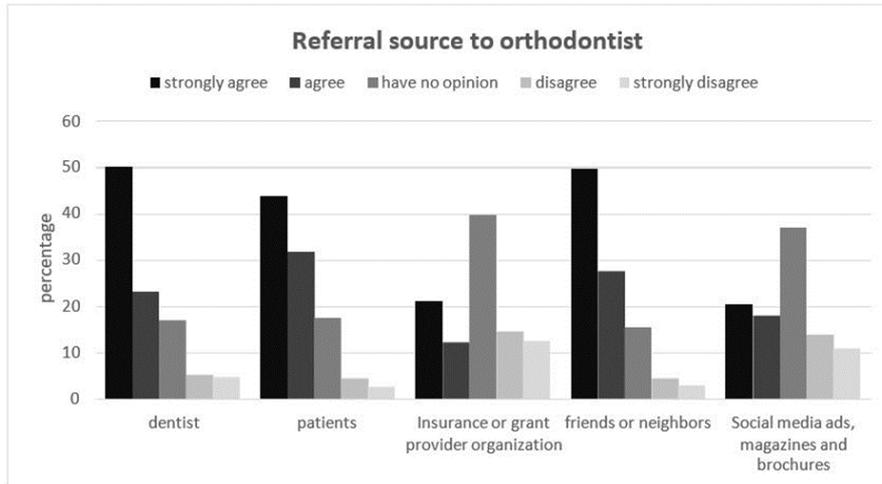
Factors	Questionnaire items	CVR	CVI	Cronbach's alpha
The effect of orthodontist's treatment	The crowded office has been a factor in your selection	0.85	0.91	0.79
	The preservation of permanent teeth by an orthodontist has been influential in your selection	0.81	0.93	
	The orthodontist did not use extraoral tools to influence your selection	0.92	0.86	
	The use of tooth-colored materials by the orthodontist has been effective in your selection	0.89	0.82	
	The use of treatment methods appropriate to the condition of the teeth by the orthodontist has been effective in your selection	0.94	0.89	
The cost of orthodontist's treatment	Paying higher treatment costs than similar orthodontic surgeries have been effective in your selection	0.76	0.85	0.82
	Paying less for treatment than similar orthodontic practices has been a factor in your selection	0.89	0.81	
	Facilitating the payment of treatment has been effective in your selection	0.91	0.92	
	The ratio between the cost of treatment and your office income has been influential in your selection	0.81	0.83	
	Being a specialist contractor with health and supplementary insurance has been effective in your selection	0.79	0.82	



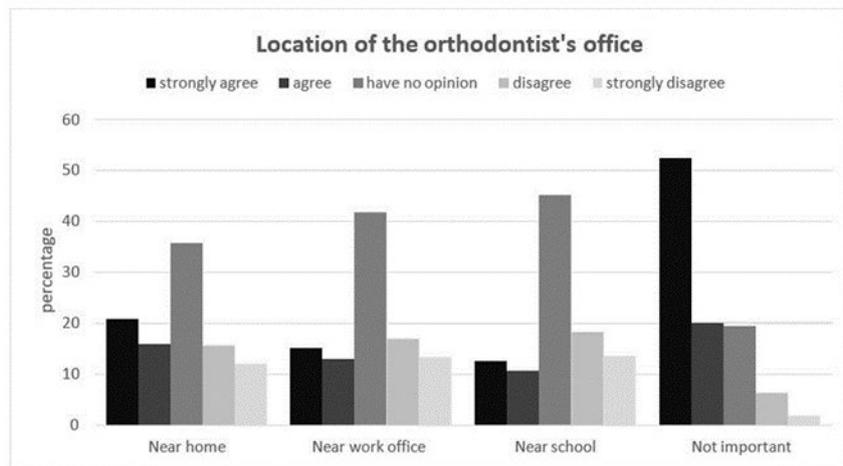
Graph 1. Distribution of factors related to the social status of the orthodontist.



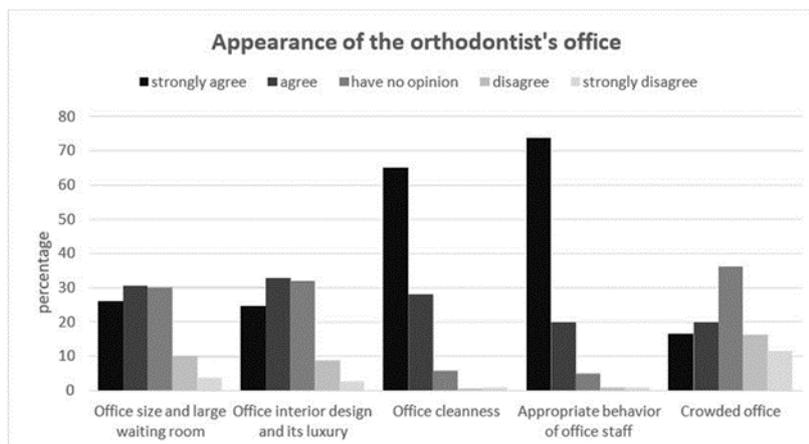
Graph 2. Distribution of factors related to personal attributes of the orthodontist.



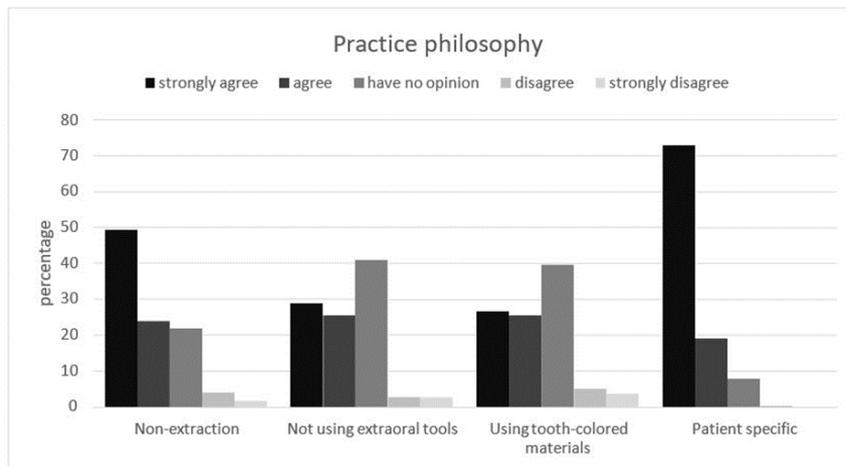
Graph 3. Distribution of factors related to the referral source to the orthodontist.



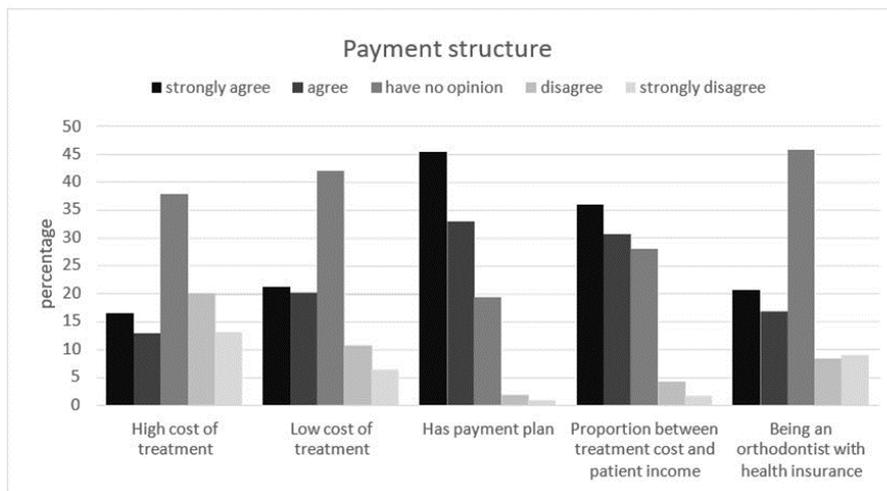
Graph 4. Distribution of factors related to the location of the orthodontist's office.



Graph 5. Distribution of factors related to the appearance of the orthodontist's office.



Graph 6. Distribution of factors related to the practice philosophy.



Graph 7. Distribution of factors related to the payment structure.

4. Discussion

There are several factors that are involved in attracting a patient to the orthodontist's office, and the different economic, social, and health conditions of each community change the individuals' preferences for the selection of an orthodontist (18). In the present study, influencing factors (consumer and provider factors) have been investigated concerning the selection of an orthodontist by the patient.

In this study, seven parameters (with different factors) were examined. Our findings showed that among the factors related to the orthodontist's social status, background and work experience along with the reputation of the orthodontist among the patients had the greatest effect on the selection of an orthodontist. Among the items related to the

individual characteristics of the orthodontist, kindness and attention to the individual in the visit session and full explanation to the patients about the treatment and its process had the greatest effect on the selection of that orthodontist. Furthermore, referral through another dentist, friends or other patients had the most effect among the items related to the method of referral to the orthodontist. Regarding the factor of the location of the office, most of the subjects did not consider the location of the office to be effective in choosing an orthodontist. Among the items related to the physical conditions of the orthodontist's office, staff's proper behavior and the cleanliness of the office had the greatest impact on the choosing of the orthodontist. Regarding the effect of practice philosophy, the use of treatment appropriate to the condition of the

teeth by the orthodontist was the most effective among the items related to this factor. Finally, in relation to the payment structure in choosing an orthodontist, having a payment plan had the greatest impact on the selection of the orthodontist.

Limited studies are available on influencing factors in the selection of an orthodontist by the patients. Most studies have been performed on the factors influencing in the selection of specialist physicians. Our findings are in agreement with the result of some studies. In a study by Harrazi et al. the physician's knowledge and experience, allocating sufficient time for examination, paying attention to the patient's problem and explaining the problem and how to treat it were the most important factors in patients' choice of physician (19). As in the present study, attention to the individual in the visit session and explanation with detail to the patients about the treatment and its process had the greatest effect on the selection of that orthodontist. Patients require respect and friendly behavior from physicians and receiving the necessary information about their treatment process. Therefore, in order to attract patients, dentists must pay attention to how they provide services and treat the patient. The success of physicians in attracting patients requires attention to the mental and emotional needs of patients.

Another important factor in choosing a specialist dentist is the referral source. When people need more specialized services such as orthodontics, they search more about the dentist and try to make a better decision of choosing a dentist by gaining more information from sources, for example friends and other patients. The study of Dehbozorgi et al. showed that the most effective factor in referring to a psychiatrist, was radio and television and the most important effective factor in referring to surgical and internal medicine specialists was the referral of the patient by other physicians (20). The findings of the present study also revealed that the choice of orthodontist by another dentist, friends and patients had the greatest impact on the patients' choice of an orthodontist.

In this study, location and appearance of the orthodontist's office were less important in patients' selection of a dentist. Among the items related to the physical environment of the office, the correct staff behavior had the greatest impact on the choice of dentist and the physical space such as size, interior design and luxury of the dentist's office had the least impact on the patient's choice of an

orthodontist. This may be due to the fact that patients do not spend much time in the dentist's office.

The patient's informed choice of dentist leads to competition among dentists. As a result, dentists need to improve the quality of their services to satisfy patients. Therefore, identifying the factors involved in choosing a dentist helps improve and enhance services.

Conclusion

Based on our study, it is concluded that the orthodontist's background and work experience, reputation among the patients, kindness and attention to the participants in the visit session by giving full explanation to the patients about the treatment and its process, referral through another dentist, friends or other patients, staff's good behavior and the cleanliness of the office, the use of appropriate treatment methods by the orthodontist and finally, having a payment plan had the greatest effect on the patients' choice of orthodontists.

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Conflict of interest

Authors declared no conflict of interest.

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