Iran J Ortho. 2020 September; 15(2):e117781. doi: 10.5812/ijo.117781.

Published online 2021 September 1. **Research Article**

Evaluating General Dental Practitioners' Knowledge About Appropriate Timing of Orthodontic Treatment in the North of Iran

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Received 2021 July 10; **Accepted** 2021 August 25.

Abstract

Background: Orthodontics is defined as a branch of dentistry that concerns the correction of malocclusion. In this regard, determining the most appropriate time for orthodontic treatment is of utmost importance. General dental practitioners (GDPs) are normally the first link of the treatment chain for patients requiring orthodontic treatment.
Objectives: The present study aimed to determine the GDPs' knowledge of the appropriate timing of orthodontic treatment in Sari, Iran.
Methods: This descriptive, analytical and cross-sectional study was performed on GDPs working in Sari in 2019. The statistical population included 380 GDPs, 186 of whom were selected. Data was collected using a 24-item questionnaire aimed to evaluate the GDPs' knowledge level of the appropriate timing of orthodontic treatment. Data analysis was performed using SPSS version 19.
Results: In total, 142 out of 186 GDPs participated in the study with a mean age of 36.12 $\pm$ 10.15 years. 86 subjects (59.9%) had less than 10 years of work experience. Total mean ($\pm$ SD) knowledge level of the GDPs was estimated at a moderate level (14.13 $\pm$ 3.79). Percentage of the knowledge levels considered as poor, moderate and good was 12, 70, and 18, respectively. There was a significant relationship between knowledge level and gender (P = 0.013). Meanwhile, no association was observed between the work experience of the participants and their level of knowledge (P = 0.393).
Conclusions: According to the results of the present study, the total mean score of GDPs' knowledge about the appropriate timing for orthodontic treatment in Sari was moderate, and only 12% of the participants had a poor knowledge level in this regard. It is notable that male subjects had a significantly higher knowledge level, and another analysis demonstrated the lack of effectiveness of work experience on the knowledge level of individuals.

Keywords: General Dentist, Knowledge, Orthodontics

1. Background

A malocclusion is defined as an irregularity of the teeth or a relationship of the dental arches beyond the range of what is accepted as normal, which affects the jaws, tongue and facial muscles (1, 2). Malocclusions are one of the major oral health problems ranking third after dental caries and periodontal disease (3). Even though malocclusion is not a pathological disease, it can negatively affect the quality of life due to causing difficulty in speech, mastication, and swallowing, and increasing a person's susceptibility to periodontal disease and traumatic dental injuries (4). It is notable that attempts to correct this disorder approximately date back to year 1000 BC (5).

Orthodontics is defined as a branch of dentistry that manages the correction of malocclusion in order to achieve optimal functional occlusion and dental and facial aesthetics. In fact, orthodontic treatment is performed to correct the malocclusion. Possible disadvantages of malocclusion for individuals will affect their long-term health in three areas of dental, mental, and social health (6). In this regard, determining the most appropriate time for orthodontic treatment is of extreme importance. Some researchers believe that both effectiveness and efficiency of the treatment depend on determining the best treatment time (7, 8).

General dental practitioners (GDPs) are normally the first link of the treatment chain who assess patients needing orthodontic treatments. Therefore, having the knowl-

edge of the appropriate time to initiate orthodontic procedures for referring to the relevant specialists seems necessary (9, 10). Providing timely treatment for patients in need of early management can prevent unsuitable and irreversible changes in soft and bone tissues and provides a proper environment for the following dental growth (11). On the other hand, delayed treatment due to inadequate knowledge of dentists can have adverse effects such as complicated treatment, increased costs for patients, and the need for complex surgical treatments whereas in many cases, a simple growth therapy would have sufficed (12). In addition, if treatment is started too early, there may be issues such as prolonged treatment or maintenance, tiredness, and lack of cooperation. Furthermore, very early treatment initiation can be associated with complications such as prolonged treatment or recovery period, treatment fatigue and lack of cooperation of patients (13).

2. Objectives

Therefore, since most previous studies have evaluated the knowledge of diagnostic and treatment issues and few researches have focused on the proper timing of treatment, the present study aimed to determine the GDPs' knowledge about the appropriate timing of orthodontic treatment in Sari, Iran.

3. Methods

This descriptive, analytical and cross-sectional study was performed on GDPs working in Sari in 2019. The statistical population included 380 GDPs, 186 of whom were selected by simple sampling based on the Morgan's table. The research was conducted after receiving approval from the ethics committee of biomedical research of Mazandaran University of Medical Sciences (code: IR.MAZUMS.REC.1398.653). The subjects were entered into the study after signing a written informed consent. Notably, the participants were ensured of the confidentiality terms regarding their personal information. Data was collected using a questionnaire by Omrani et al. (6), the reliability of which was confirmed at the Cronbach's alpha of 0.78. This 24-item questionnaire is applied to evaluate the GDPs' knowledge level about the appropriate timing of orthodontic treatments. A score of one is given to correct answers while incorrect answers are allocated zero points. Therefore, the score range considered for each person is 0 - 24, classified into three categories of low (1 - 8), moderate (9 - 16), and good (17 - 24) knowledge levels (13). Moreover, information such as age, gender and work experience were recorded by the researcher.

Data analysis was performed via SPSS version 19 using chi-square. It is notable that a P-value of less than 0.05 was considered statistically significant.

4. Results

In total, 142 out of 186 GDPs (87 men and 55 women) participated in the study with a mean age of 36.12 $\pm$ 10.15 years. According to the results, 86 subjects (59.9%) had less than 10 years of work experience while 56 participants (39.4%) had equal to or more than 11 years of experience. In addition, the total mean ($\pm$ SD) knowledge level of the GDPs was estimated at a moderate level (14.13 $\pm$ 3.79). Moreover, the percentage of the knowledge levels of poor, moderate and good was 12, 70, and 18, respectively.

There was a significant relationship between knowledge level and gender (P = 0.013). In addition, 7% of women and 10% of men had a poor knowledge level in this regard. However, the knowledge level of men was higher, compared to women (Table 1). Meanwhile, no association was observed between the work experience of the participants and their level of knowledge (P = 0.393). In total, the number of subjects with a work experience below 10 years was higher, compared to other participants. The results demonstrated that the participants with a work experience below 10 years had a better knowledge level, compared to those with more than 11 years of experience (Table 2).

Table 1. Relationship Between the Knowledge Level of Participants and the Variables of Gender and Work Experience

Knowledge Level	Gender, No. (%)	
	Male	Female
Poor	10 (11.5)	7 (12.7)
Moderate	68 (78.2)	32 (58.2)
Good	9 (10.3)	16 (29.1)
P-Value	0.013	

Table 2. Relationship Between the Knowledge Level of Participants and the Variable of Work Experience

Knowledge Level	Work Experience, No. (%)	
	Below 10 years	Above 11 years
Poor	8 (9.3)	9 (16.1)
Moderate	61 (70.9)	39 (69.6)
Good	17 (19.8)	8 (14.3)
P-Value	0.393	

5. Discussion

According to the results of the study, the overall mean GDPs' knowledge level of the appropriate timing of orthodontic treatments in Sari was moderate and only 12% of the participants had a poor knowledge level in this regard. In the present study, male subjects had a significantly higher level of knowledge, and work experience had no impact on the knowledge level of GDPs. However, it seems like over the years after graduation, the average score of GDPs' knowledge of the appropriate timing of orthodontic treatments has diminished. This could be justified by obsolete content and staying away from educational environments, and lack of continuity in reading reference materials. In this context, our findings are in line with the results obtained by Jafari et al. (14), who marked that the knowledge level of dentists decreased as time passed since their graduation. Nonetheless, the mentioned researchers conducted a study on knowledge of the hold space, which is only one of the many subjects in the primary and complex dental courses.

In 2018, Omrani et al. (6) evaluated the GDPs' knowledge level of the appropriate timing of orthodontic treatment in Isfahan, Iran, reporting a mean score of 14.37 (out of 24 scores) in this regard. In the end, the knowledge level of the participants was estimated at a moderate level, which demonstrated the necessity for improving this factor among GDPs. In this respect, our findings are congruent with the results obtained by the aforementioned study, which might be due to similar educational curricula in different schools of universities of medical sciences in the country. Omrani et al. (6) also reported that the information of graduates in the 80s was higher than other participants, followed by those graduated in the 70s and before the 70s, respectively. This decrease in the knowledge level of GDPs with increased time since graduation was observed in the present research as well. While the mentioned association was significant in the research by Omrani et al. (6), it was insignificant in our study, one of the reasons of which could be the participation of an equal number of people with a high work experience and those graduated in less than 10 years in the mentioned study, compared to the current research.

In 2017, Naseri (15) evaluated the GDPs' views and knowledge of the proper timing of orthodontic treatment for patients in Bandar Abbas, Iran. According to their results, the participants had an acceptable knowledge level, in a way that their maximum score was 34. Moreover, the subjects' mean score was estimated at 19.71, which was acceptable considering that more than half of the score could be acquired (15). Given that the score of 19 was in the middle third of the range of scores, the mean knowledge of the population under study was at a moderate level.

One of the major drawbacks of the study was the lack of cooperation of some GDPs regarding the completion and delivery of questionnaires. In addition, there was a limited number of similar studies on the knowledge of orthodontic treatment of those working in the field of oral therapy in the country and the region, which limited the generalizability of the final results. Therefore, it is recommended that similar studies be conducted at various levels to gain the necessary information and improve knowledge among the workforce in the field.

5.1. Conclusions

According to the results of the present study, the total mean score of GDPs' knowledge of appropriate timing of orthodontic treatment in Sari was moderate, and only 12% of the participants had a poor knowledge level in this regard. It is notable that male subjects had a significantly higher knowledge level, and another analysis demonstrated the lack of effectiveness of work experience on the knowledge level of individuals.

Footnotes

Authors' Contribution: Study concept and design: FS. Acquisition of data: SD. Analysis and interpretation of data: RAN. Drafting of the manuscript: AL. Critical revision of the manuscript for important intellectual content: SD. Statistical analysis: RAN. Administrative, technical, and material support: MA. Study supervision: MA.

Conflict of Interests: The authors declare that there are no conflicts of interest regarding the population of this manuscript.

Ethical Approval: The research was conducted after receiving approval from the ethics committee of biomedical research of Mazandaran University of Medical Sciences (code: IR.MAZUMS.REC.1398.653).

Funding/Support: This study was supported by Dental Sciences Research Center of Mazandaran University of Medical Sciences.

Informed Consent: The subjects were entered into the study after signing a written informed consent.

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