



Research Article

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Assessment of Patients' Understanding of Orthodontic Treatments

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Abstract

Objectives: The aim of this study was to investigate patients' understanding of orthodontic treatment. **Materials and methods:** In order to evaluate patients' understanding of orthodontic treatments and related alternatives, a questionnaire was administered to 181 patients. The questionnaire consisted of six parts, which are related to the patients' understanding of the diagnosis, treatment plan and the risks that accompany orthodontic treatment. Capture and data collection were performed using Epi-info 6.0.fr. **Results:** 82.32% of the patients said they were aware of the diagnosis and 73.48% of the treatment plan. 30.8% of the patients knew the risks of dental staining; no patient was aware of the risk of necrosis related to dental orthodontic treatment, 5% were aware that orthodontic treatment could involve gingival recession and 2% were totally unaware of a potential risk of root resorption. 78.45% of the patients did not know that relapse was a potential risk to treatment and 98% were unaware of the risk of failure. **Conclusion:** More efforts should be made to involve patients in decision-making. In addition, Dental practitioners must also be aware of the legal aspects of consent issues, so that they can relate them to proposed orthodontic treatment.

Keywords: Orthodontics, Consumer Health Information, Patients Comprehension, Informed consent, Morocco.

INTRODUCTION

Informed consent is defined as the voluntary and continuing permission of the patient to receive special treatment. It must be based on adequate knowledge of the purpose, nature, likely effects and risks of this treatment, including the likelihood of its success, as well as the presentation and discussion of any other alternative treatment [1].

Specifically, when a patient wishes to receive orthodontic treatment, the practitioner must provide as much information about the type of treatment (fixed or removable), the means used, the purpose, the importance of patient cooperation, successful treatment likelihood, prescription with or without extraction and the teeth involved. Therefore, the patient should be informed about the risks of failing to consent [2-3].

In orthodontic practice, well-informed patients are believed to have more reasonable expectations of treatment and a greater involvement in treatment [4-7]. In this respect, several studies showed that well-informed patients responded better to treatment [4, 5, 8], experienced less anxiety [9] than patients who failed to understand their treatment plan. Thickett *et al.* [10] in a more recent study showed that anxious and unformed patients about the risks of orthodontic treatment missed their appointments and were less cooperative [10]. Therefore, the use of informed consent should be an integral part of any orthodontic consultation. Such a procedure is fundamental to enhance dental practitioner-patient communication. Sometimes, the poor educational background of patients prevents them from understanding the treatment plan [11]. If informed consent is a common practice in developed countries, in Morocco, however, little is known about it. In fact, to our knowledge, no informed consent document has ever been provided to patients before orthodontic treatment. The present study proposed to address that need. Specifically, it seeks to assess patients' understanding of diagnosis, orthodontic treatment process and potential risks.

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MATERIALS AND METHODS

181 patients, following treatment at Casablanca Dento-Facial Orthopaedics Unit, took part in this study. A screening examination was undertaken and a treatment plan was established and communicated to the patients.

In order to evaluate the patients' understanding of orthodontic treatment, a questionnaire was administered to them. The aim of the questionnaire was to get information about the patients, the diagnosis, the suggested treatment plan, alternative options, the risks and the means of prevention.

A pilot study involving 35 patients was undertaken to investigate whether the questionnaire was comprehensible enough. An examination of the patients' responses revealed that the patients experienced difficulty answering open-ended questions. On the basis of this finding, the questionnaire was revised and multiple choice questions were used, instead.

Data were collected from patients by the same dental practitioner in collaboration with the examining orthodontist. Data analysis was performed using Epi-info 6.0.fr software.

RESULTS

The experimental sample consisted mostly of women (69, 6%), ranging from 12 and 56 years of age. 63, 6% of the patients had a low socio-economic status, compared to 3, 9% of the participants who had a relatively high socio-economic status (table 1).

149 patients (82, 32%) claimed to be aware of malocclusion, 98% of whom had an idea about the different screening measures. With regards to the treatment plan, 73, 48% of the patients claimed to have understood it (table 2).

90% of the patients said that they were not informed about alternative treatment plans; 77% of the patients were aware that orthodontic treatment could have adverse effects. 72,22% of the patients knew that orthodontic treatment could result in tooth decay (69, 2%), and/or stained teeth (30, 8%). However, no patient was aware of the risk of necrosis related to dental orthodontic treatment.

50, 2% of the patients were informed about the periodontal risk related to orthodontic treatment. The periodontal risk may result from gingival inflammation in 93% of the cases, while it may result from gingival recession in 5% of the cases. Only 2% of the patients were aware of a potential risk of root resorption (table 3).

5% of the patients were informed about the risk of cranio-mandibulo dysfunction, which include articulatory sounds in 77% of the patients, articulatory pain in 11,5% of the cases, and articulation obstruction in 11,5 % of the cases.

78,45% of the patients did not know that relapsing was a potential risk of treatment and that 98 % did not know that treatment could fail (table 3).

96% of the patients were aware that there were different means of prevention such as proper techniques of brushing teeth, the use of mouthwash, dental floss and punctuality.

In contrast, only 7.2% of the patients claimed to know the potential benefits of toothpaste and fluoride vanish to prevent tooth decay during orthodontic treatment.

DISCUSSION

The present study demonstrated that information consent functioned

well both at the level of diagnosis and the treatment plan. However, the main difficulty lied in the patients' lack of awareness of potential risks such as tooth decay, relapse, risk of necrosis, root resorption, and treatment failure. In fact, most patients were not aware of the risk of relapse, and failure to achieve successful orthodontic treatment. Much effort should be made in terms of health literacy to improve communication between orthodontists and their patients.

With regards to evaluation, the problem encountered in our study was the difficulty of patients to respond to open-ended questions, which prompted us to adopt a questionnaire based on multiple choice questions. The findings of the present study are consistent with the results of Baird and Kiyak [6], who noted that their patients scored below level when they were asked open-ended questions. In the same vein, Thomson *et al.* [12] evaluated the ability of patients to retain information, using 3 orthodontic methods: written, visual and oral. They used closed and open questions. The authors concluded that there was no significant difference between groups.

An important finding of the present study was that the patients were unable to remember the information they received during their initial orthodontic consultation. In fact, a period of time elapsed between the administration of the questionnaire and the onset of orthodontic treatment; this difference between questionnaire administration and the start of orthodontic treatment resulted in inconsistencies in the results (memory issues). The time factor was reported in various studies including that of Baird and Kiyak [6], where the period of time between information session and administration of the questionnaire ranged from 6 to 36 months.

The study also showed excellent results with regards to the understanding of the diagnosis (82.32%) and the treatment plan (73.48%). The study by Ernst *et al.* [13] found similar proportions. In fact, their patients had a clear idea about the appliances used (89.8%) and the treatment plan (96%). However, there was no reference to the period of time between patient consent and the implementation of the study.

As far as the use of informed consent in orthodontic treatment is concerned, it is very crucial to warn patients of the potential risks during orthodontic treatment. This aspect of the consent has been poorly defined and is most of the time left up to orthodontists. In the present study, 77% of our patients were aware of the risks associated with orthodontic treatment. Similar results were found by Ernst *et al.* [13], who reported a proportion of 75%. Likewise, Mortensen's study [14] showed that both parents and children reported less information than they received 15 to 30 minutes earlier. This was particularly true for the risks of orthodontic treatment such as relapse, gingivitis and root resorption.

72% of our sample were aware of the dental risks involved in orthodontic treatment. Two-thirds (69.2%) evoked potential problems such as tooth decay, 30.8%, spoke of dental staining, while none of our patient mentioned the potential risk of necrosis. These findings are consistent with the results of Ernst's study [13], where 36.8% of their patients evoked the risk of tooth decay.

Other risks such as periodontal problems and root resorption were poorly understood by patients. Our results also showed that 49.2% of the patients were unaware that orthodontic treatment may cause periodontal problems.

Only 2% of patients knew that a potential risk of root resorption existed, and this percentage is relatively low compared to those reported by Ernst *et al.* [13], and Pratelli *et al.* [15] who found rates of respectively 20.4% and 41%. These results are still insufficient; this is unfortunate since in their study, Mirabella *et al.* reported that over 40% of their patients with orthodontic appliances showed root

resorption [16]. Some results, less conclusive, were reported on knowledge of the risks of relapse and the need for retention after treatment. Indeed, more than 78% of our patients disregarded those risks. These low percentages are consistent with previous studies, which reported a rate of 56%. [13], compared to only 30% of patients, who could recall the possible risk of relapse [15].

Most of the risks in orthodontic treatment could be prevented by dental cleaning scaling and topical fluoride treatment [17]. In our sample, 93% of the patients did not know that toothpastes and fluoride varnishes were preventive measures during treatment. It is therefore important to note that all risks need to be stated in the informed consent form; a copy must be kept in the patient record and another given to the patients. However, currently, in Morocco, there is no law that governs the process of informed consent. The need to examine and accurately record all significant risks was highlighted in

Captions of tables

Table 1: Demographic information on patients.

Sexe		Age			Socio-Economic Status		Education			
F	M	[12-20ans]	[21-35]	[36-5]	Low	Average	High	School	University	Elementary
69,61%	30,39%	50,28%	32,04%	17,68%	63,63%	32,47%	3,90%	36,19%	35,24%	28,57%

Table 2: Evaluation of patients' understanding of diagnosis and treatment Plan

Anomaly Awareness		Awareness of Tests		Awareness of treatment Plan	
Yes	No	Yes	No	Yes	No
82,32%	17,68%	98,90%	1,10%	73,48%	26,52%

Table 3: Evaluation of risk awareness related to orthodontic Treatment

Risk awareness related to orthodontic Treatment		Yes	No
Dental risks	- Tooth decay 69.2% - Dental staining 30.8% - Dental necrosis 0%	72.22%	27.78%
Periodontal Risks	- Gingival inflammation 93% - - Gingival recession 5% - Root resorption 2%	50.2%	49.8%
Articulatory risks	* - Articulatory sounds 77% - - Articulatory pain 11.5% - - Obstruction 11.5%	5%	95%
Relapse Risks		21.55%	78.45%
Failure Risks		2%	98%

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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this study.

CONCLUSION

The purpose of the present study was to investigate Moroccan patients' understanding of orthodontic treatment and alternative options. The essential conclusions that can be drawn from the study are outlined below:

- The consent process for diagnosis and treatment plan gives satisfaction, but some risks of orthodontic treatment requires a focus.
- More studies should be conducted to evaluate the reliability of this tool and compare it with visual and oral instruments.
- More efforts are needed to enhance the process of informed consent at the legal level, so that it can be generalized.

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