

# Romanian dentists' perception of flexible removable partial dentures

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## ABSTRACT

**Introduction.** A flexible partial denture, as a treatment solution for partial edentulousness, is a current alternative in dental prosthetics, due to simplified design, aesthetic and biomechanical qualities of resin materials, that contribute to the favourable distribution of masticatory forces on the dental and mucosal support.

**Objective.** This study aims to highlight the medical perception of Romanian dentists regarding the evolution of patients treated with flexible partial dentures.

**Material and method.** The research was carried out over a period of two years (2017-2019), on a study group composed of 84 Romanian dentists. Subjects were asked to answer an anonymous questionnaire consisting of 14 closed questions, to outline frequently aspects encountered in practice related to the clinical evolution of the patient rehabilitated with flexible partial removable dentures.

**Outcomes.** Patient comfort (76%) and higher aesthetic properties (54%) were the main reasons why dentists chose a partially flexible prosthetic for the prosthetic treatment of the patient. In the evolution of prosthetic patient, the main problems found at the partial flexible prosthesis were food pigment impregnation of the base (51%) and limited possibilities of repair (34%). Changes in maintenance, support, stability, aesthetic or possible fractures of base and clasps were seen by 46% of respondents, at approximately 1 to 2 years after the application of flexible partial dentures.

**Conclusions.** Flexible partial prosthesis is a method of treatment, whose main advantages are represented by esthetics and superior adaptation of the patients, but because of the deficiencies that occur over time, it is better to be recommended as a provisional treatment solution.

**Keywords:** partial edentation, flexible partial denture, thermoplastic resins

## PRESENT STATUS OF THE PROBLEM

The territory of partial edentation provides a complex pathology which affects the intraoral balance with certain consequences in facial harmony and as a result, a clinical aspect that influences the social integration of patients [1].

A flexible partial denture, as a treatment solution for partial edentulousness, is a current alternative in dental prosthetics, due to simplified design, aesthetic and biomechanical qualities of resin materials, that contribute to the favourable distribution of masticatory forces on the mucosal and periodontal support.

At the moment, the theoretical support available in literature is very narrow, particularly in terms of clinical and technical phases of flexible

prosthesis. The first article specifying the results obtained from a clinical trial, where physicians were asked about the evolution of patients rehabilitated with flexible partial dentures, which also introduced a working protocol, was published in 2011 in Japan [2,3].

## OBJECTIVES

The aims of the study consisted of analysing the current practice with flexible partial dentures of the Romanian dentists and obtaining the feedback of a group of dentists regarding the evolution of patients treated with flexible partial dentures, to highlight the main changes occurring both at the level of the prosthetic field and at the level of the denture.

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## MATERIAL AND METHOD

The study was conducted on a study group of dentists (SG) consisting of 84 subjects (56 women, 28 men), aged between 24 and 50 years (average: 32.75 years  $\pm$  7.264 years), selected from an initial group (IG) of 87 randomly selected subjects.

The subjects were asked to answer an anonymous questionnaire, formulated in Romanian, distributed in physical or electronic format. It took about 5 minutes to complete the questionnaire, consisting of 14 closed questions, with pre-formulated, single or multiple answers, divided into 3 parts: demographic data; data highlighting the level of knowledge about the flexible partial dentures (indications, contraindications, classes of materials from which this type of prosthesis is made); clinical data.

The criteria for inclusion in the study were:

1. Expressing consent for participation in the study;
2. At least one prosthetic treatment, of a partially edentulous patient, with flexible partial dentures.

The exclusion criteria from the study was the failure to complete the questionnaire in full. In the present case, 3 respondents were excluded.

The information was recorded and subsequently electronically processed using the STATA® 16.0 programme for Windows 10 Home®. Simple descriptive statistics (amounts, medium, median), Pearson Chi-Square test, Fisher and Likelihood have been used to analyse qualitative, quantitative variables and associations at a statistical level  $p < 0.05$ . Microsoft Excel 2016 was used for graphi-

cal expression of results. The independent variables considered were: age, sex, number of years of practice, activity environment, medical degree and type of specialisation.

## OUTCOME

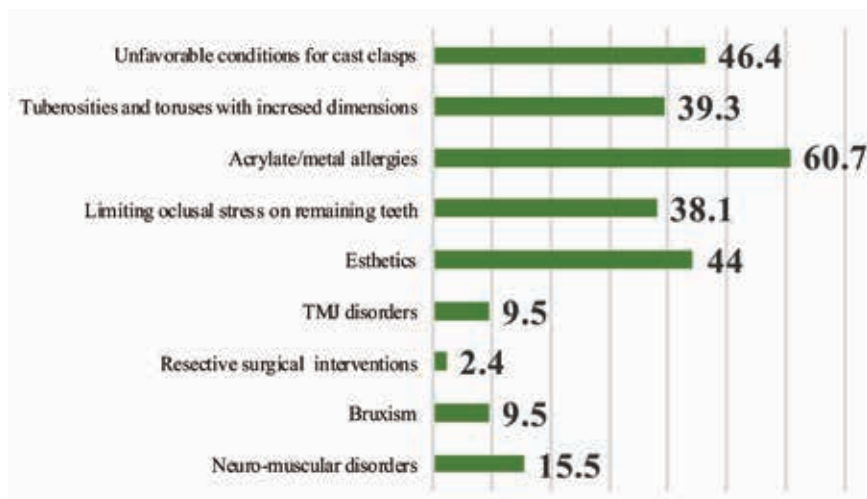
A percentage of 52% ( $n = 44$ ) of SG was represented by specialists or ongoing specialists, most of them consisting of prosthetic specialists: interns 25% ( $n = 21$ ), specialists 10% ( $n = 8$ ) and primary doctors 2% ( $n = 2$ ). Regarding the years of medical practice, 46% ( $n = 39$ ) have less than 5 years of practice.

Flexible denture was a prosthetic removable solution adopted in practice by 20% ( $n = 17$ ) of the responding physicians 42% ( $n = 35$ ), as a long term solution (42%,  $n = 35$ ).

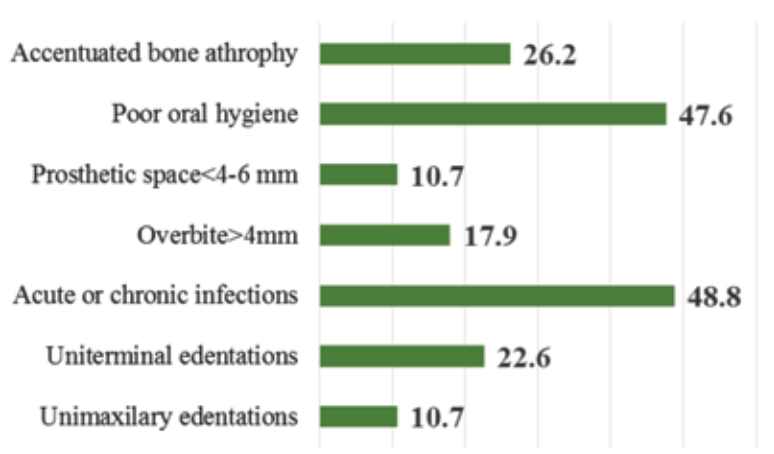
In general, patient comfort (76%,  $n = 64$ ) and higher aesthetic properties (54%,  $n = 45$ ) were the main reasons why dentists chose a partially flexible prosthetic for the prosthetic treatment of the patient (Fig. 1).

The main clinical situations where dentists did not indicate the partial flexible prosthesis were deficient oral hygiene (48%,  $n = 40$ ) and acute and chronic infections of the mucosa (49%,  $n = 41$ ) (Fig. 2).

In the evolution of the patient, the main problems found at the partial flexible prosthesis were food pigment impregnation of the base (tea, coffee, wine etc.) (51%) associated with faster loading of debridments (29%). Limited possibilities of repair (34%) of the base, clasps and detached teeth



**FIGURE 1.** Clinical situations for indication of flexible dentures by the SG (%)



**FIGURE 2.** Clinical situations for contraindication of flexible dentures by the SG (%)

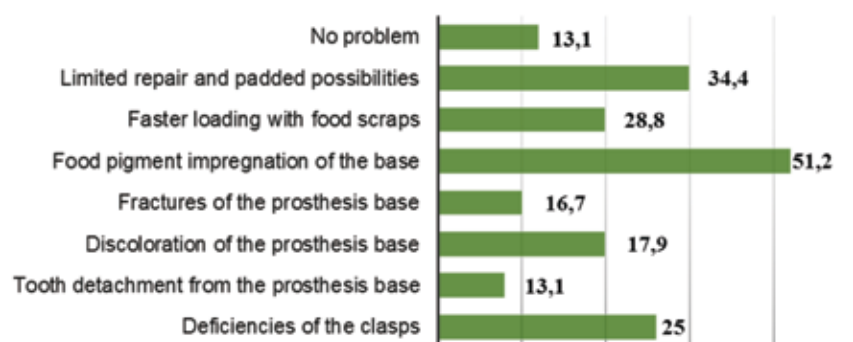
were also observed (Fig. 3).

It is noted, with statistical significance, that dentist who have noticed faster impregnation of the prosthetic base (29%,  $n = 24$ ), do not indicate partial flexible prosthesis at patients with poor oral hygiene (70%,  $n = 17$ ) (Pearson Chi-square = 7.25,  $p = 0.007$ , 99% confidence index) and 46% ( $n = 11$ ) of them did not use thermoplastic resin from poly-amides class (e.g. Valplast®) (Pearson Chi-square = 5.73,  $p = 0.017$ , 95% confidence index).

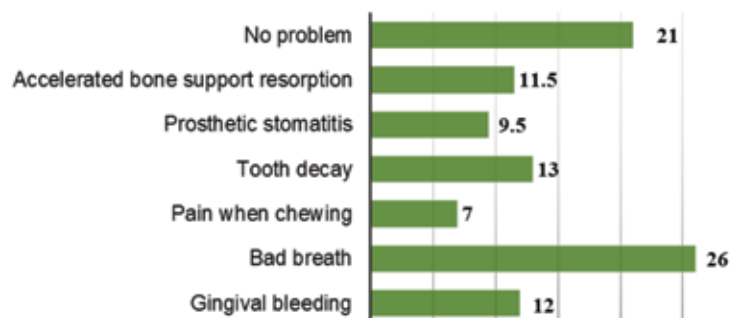
Regarding the post-treatment evolution of the intraoral hard and soft tissues, most dentists did

not notice changes caused by partially flexible prosthesis (45%,  $n = 38$ ). The most common deficiencies faced by the dentists were: bad breath (26%,  $n = 22$ ), cavities on limiting teeth (13%,  $n = 11$ ) and gingival bleeding (12%,  $n = 10$ ) (Fig. 4).

Changes in maintenance, support, stability, aesthetic or possible fractures of the base and clasps were seen by approximately half of respondents, at approximately 1 to 2 years after the application of flexible partial dentures (46%,  $n = 39$ ). Of all these dentists (46%,  $n = 39$ ), it is noted with statistical



**FIGURE 3.** Deficiencies observed by the SG in the flexible partial prosthesis in time (%)



**FIGURE 4.** Deficiencies observed by the SG in the prosthetic field of patients with flexible partial prostheses (%)

significance that 59% (n = 23) examined their patients with partial flexible prosthesis twice a year (Pearson Chi-square = 28.4, p = 0.005, 99% confidence index).

Regarding the satisfaction of respondent physicians concerning the evolution of the patient with a flexible partial prosthesis, (64%, n = 54) were delighted by their progress and 18% (n = 15) were little or not at all excited.

## DISCUSSIONS

In general, 1 out of 5 Romanian dentists reported that they use flexible partial dentures in their current practice, unlike Pun D.K. et al. research, where a lower frequency of 1 out of 3 is found [4].

Dentists indicated the flexible partial denture as a long term prosthetic solution (63%) and the main reasons for recommending this treatment were patient's comfort and superior aesthetics. These aspects are also found in the study of Hill E.E. et al., but the financial aspect is the main reason why, the flexible partial denture is indicated as a long-lasting solution [5].

The main contraindication refers to patients' poor oral hygiene (48%), in direct correlation with the deficiencies observed in the followed patients (fetid halena, caries on main abutment teeth, gingival bleeding) and at the flexible partial dentures (impregnation with food pigments and loading with food debris). Bosînceanu et al., Takabayashi Y. et al. and Kenji F. et al. noted the same aspects in their studies [2,6,7].

*Conflict of interest:* none declared

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Dispensarization of prosthetic patients was performed twice a year by almost half (49%) of participating dentists, and half of them faced prosthetic deficiencies after 1 or 2 years. Hill E.E. et al. note that 50% of doctors who noticed deficiencies in the abutment teeth, resumed prosthetic treatment one year after the application of a flexible partial prosthesis [5].

Despite the above, more than half of the respondent physicians (64%) were delighted by the flexible denture evolution's in patients. This can be associated with the biological adaptation of prosthetic patients with flexible partial prostheses, which is approximately equal to those, who are rehabilitated with metal-based partial prostheses, highlighted aspects by Hundal M. et al [8].

## CONCLUSIONS

Flexible partial prosthesis is a method of treatment, which should be correctly recommended depending on the characteristics of the prosthetic field and of the patient in general.

Although esthetics and patient's adaptation is superior, it is indicated more as a provisional treatment solution, as a result of deficiencies that occur over time – impregnation of the base of the denture associated with bad breath.

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