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Original Article

Patients' perception about the outcomes of prosthetic treatment in Southern Brazil - a cross sectional study

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Aim: this study assessed the patients' perception of the outcomes of prosthetic treatment in a University of Southern Brazil. **Methods:** patients seeking for prosthetic treatment were invited to answer a questionnaire with 41 items about the potential risks, benefits, and consequences of no treatment. Answers were obtained according to a five-item Likert-scale varying from 1 (completely disagree) to 5 (completely agree). Sociodemographic data was included in the comparison. Mann-Whitney or Kruskal-Wallis (95%) compared data depending on the variable. **Results:** two-hundred twenty-five patients answered the questionnaire. Median age of participants was 45-54 years. The potential benefits were similar among participants irrespective of the variable adopted. The perception of risks was significant influenced by variables gender, age, education level, type of edentulous space, prior treatment with prosthodontics, type of prosthodontics, and prosthodontics usage in years. Consequences of no treatment were affected by age, prior treatment with prosthodontics, and prosthodontics usage in years. **Conclusions:** the study showed the fundamental importance of correct elucidation about the potential risks (negative perception) in the initial appointment for the studied population. Elucidation about the consequences of no treatment are relevant because some differences were seen into the variables. Prosthodontics patients from the city of Passo Fundo seem well informed about the benefits of the prosthetic treatment, besides the significant influence of some sociodemographic and prosthetic conditions.

Keywords: Dental prosthesis. Education, dental. Self Concept.

Introduction

In Brazil, through an epidemiological survey of oral health, there are about 30 million edentulous individuals[1]. Among these, about 97% of the elderly subjects need prosthetic rehabilitation of an average of 25.4 teeth. Individuals between 35 and 44 years of age have an average of 7.4 teeth lost[1].

Partial or total edentulism may result in a significant deterioration of the health of the stomatognathic system and may result in structural and pathological changes in the temporomandibular joint, which may be symptomatic or asymptomatic[2,3]. The loss of teeth limits the functions directly linked to the maintenance of quality of life[4-6]. Their impact may still result in decreased chewing and phonation capacity, as well as nutritional, aesthetic and psychological losses, with reductions in self-esteem and social integration[7].

In view of the impact that dental prostheses can have on rehabilitated patients, there has been a growing increase in researches focusing on the effects of different perceptions of patients on prosthetic treatments[8-11]. This is also due to the subjectivity that the expectations can present, due to the lack of knowledge of the patient about the proposed treatment, being thus considered an unrealistic expectation[12].

With this, treatment decision-making should be cautious, shared and discussed with patients. This culture of treatment discussion must be initiated in an academic context[13], with the guidance of professors to students. Therefore, care becomes an important learning experience since the undergraduate period[14].

Concepts, concerns, beliefs and attitudes regarding dental condition and prostheses are important variables that influence oral health satisfaction and the search for treatment[12]. In this sense, the questions about satisfaction[15] and the perception on oral health[4,10] of the rehabilitated patients were taken into account in order to better understand the effects of prosthetic treatment on patients' lives[4,5,10,15].

Given that there is a need for greater understanding of the subject matter, the aim of this study was to assess the patients' perception of the outcomes of prosthetic treatment in a University of Southern Brazil, with individuals' residents in the city of Passo Fundo, RS. The null hypotheses tested was that sociodemographic and prosthetic conditions would not affect the patient's perception about the dental prosthetic treatment.

Materials and Methods

Study Design and Location

This cross-sectional study was performed in a University in Southern Brazil (Meridional Faculty - IMED), located in the city of Passo Fundo. The population of Passo Fundo is approximately 200,000 inhabitants[16]. Passo Fundo is a health reference in the State, and there are three Dental Schools with different types of treatment available for the population. This study was approved by the Ethical Committee of the IMED (Protocol number: 1.625.668/2016).

Inclusion criteria and data collection

Patients' perceptions about dental prosthesis treatment was assessed by applying a previously validated questionnaire[10] as presented in Table 1. The protocol for patients who sought treatments at IMED is go through a screening and then the patient is forwarded to the specific clinic which capable to meet the patient's demands. The participants who were scheduled at the prosthetic dental clinic and met the inclusion criteria were invited to answer the questionnaire and signed an informed consent form.

The inclusion criteria involved patients who sought partially or full edentulous prosthetic treatment, and wearing (or not) any type of dental prosthesis. Patients without cognitive capacity to understand the questions or patients who refused answer the questions were excluded.

The demographic data of patients was obtained according to gender, age, and educational level. Prosthetic-related data was collected according to the type of edentulous spaces, prior treatment with prosthodontics, type of prosthodontic treatment, and prosthodontic usage in years.

The questionnaire contains 41 items[10] (Table 1) involving questions about: (1) the perceived potential benefits or positive consequences of the prosthetic treatment (positive perceptions); (2) the risks or negative consequences of the prosthetic treatment (negative perceptions); and (3) the consequences of no treatment with dental prosthesis. The possible answers for each item were presented in a 5-point Likert-type scale: 1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree. One interviewer helped the patients to interpret the questions when they had any doubts.

Table 1. Perceive potential outcomes investigated.

Benefits or positive perceptions	Risks or negative perceptions	Consequences of no treatment
1 – Better chewing	18- High cost	32- Digestive problems
2- Improve eating foods	19- Risk of rejection	33- Makes someone uglier
3- Better smile	20- Difficult to chew	34- Causes headache
4- Better appearance	21- Risk of cancer	35- Makes someone feel introverted and decrease self-esteem
5- Improve quality of life	22- Can cause harm to the bone and gingival tissues	36- Worsen personal relationship
6- Improve general health	23- Treatment is stressful	37- May cause general health problems
7- Better speech	24- Prosthodontics need periodic recall	38- Food avoidance
8- Improve oral communication	25- Injury to the remaining teeth	39- Makes someone feel older
9- Better digestion	26- Prolonged treatment may cause anxiety	40- May cause negative thoughts
10- Alleviate headaches or facial pain	27- Access to treatment is restricted by costs	41- Intervention is imperative
11- Improve bite	28- Treatment results can be disappointed	

Continue

Continuation	
12- Improve professional opportunities	29- Demand more patient care than natural teeth
13- Help to protect remaining teeth	30- Will never be like natural dentition
14- Benefits overcome costs	31- Quality of service is professional-dependent
15- When properly executed long-term outcomes are complementary	
16- Feel younger	
17- Feel pleased and confident	

Data analysis

Data were explored using SPSS® software (version 20; IBM, Armonk, NY, USA), and all inferences were performed with two-tailed trials using a significance level of 95% and statistical power of 80%. The Mann-Whitney test was used to compare data for the variables of gender and prior treatment with prosthesis. The Kruskal-Wallis test was used to compare the outcomes of the other variables.

Results

Two-hundred twenty-five subjects answered the questionnaire. Median age of participants was 45-54 years. All demographic data is presented in Table 2.

Considering all items (Table 3), lower scores were observed for subjects aged 65-74 years old, with educational level ≥ 12 years, presenting single or total edentulous spaces, those prior treated with prosthodontics, and wearing partial fixed, complete denture or implant supported during 0-5 or 21 or more years when compared to subjects with 55-64 years old, educational level of 8-12 years, partial edentulous spaces, without prior prosthodontics treatment, and not wearing prosthodontics any time, respectively ($p<0.05$).

The benefits or positive perceptions (Table 3) did not differ among subjects ($p>0.05$). In this category, high values were observed within all variables (above 4.3), perceiving the benefits provided at least somehow by the prosthetic treatment.

Females and also subjects aged 65-74 years old (when compared to those with 55-64 years old), presenting educational level ≥ 12 years (vs 8-12 years), single or total edentulous spaces (different to partial spaces), prior treated with prosthodontics, and wearing partial fixed, complete denture or implant supported (vs not wearing and partial removable) during 0-5 years (in contrast to not use and use for 11-20 years) ($p<0.05$), showed the lower values to the potential risks or negative views (Table 3).

The patients in general agreed with the consequences of the no treatment. It is worth to mention that mean values were high in all the variables in this category (above 4.47). Subjects with 35-44 and 65-74 years old, prior treated with prosthodontics, and using their dentures by 11-20 years presented lower scores than those with 45-54 years old, not previously treated, and not wearing prosthodontics or wearing during 0-5 years, respectively ($p<0.05$) (Table 3).

Table 2. Demographic and clinical data of participants.

	N	%
Sociodemographic aspects		
Gender		
Female	149	66.2
Male	76	33.8
Age		
25-34	11	4.8
35-44	37	16.4
45-54	68	30.2
55-64	54	24.0
65-74	40	17.8
75-85	15	6.8
Education level		
<8 years	55	24.4
8-11 years	71	31.6
≥12 years	99	44.0
Clinical aspects		
Type of edentulous space		
Single	57	25.3
Partial	80	35.6
Total	88	39.1
Prior treatment with prosthodontics		
Yes	183	81.3
No	42	18.7
Type of prosthodontics		
Do not use	38	16.9
Partial removable	33	14.7
Partial fixed	37	16.4
Complete denture	72	32.0
Implant-supported	45	20.0
Prosthodontic usage (years)		
Do not use	42	18.7
0-5	55	24.4
6-10	23	10.2
11-20	26	11.6
21 or more	79	35.1

Table 3. Comparison of clinical and demographic data. Different uppercase letters denote significant difference within the same column for each variable.

Variable	Category	All items	Benefits or positive	Risks or negative	No treatment
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Gender	Female	4.05 (0.3) A	4.49 (0.4) A	3.11 (0.6) A	4.61 (0.4) A
	Male	3.98 (0.2) A	4.45 (0.4) A	2.92 (0.6) B	4.65 (0.4) A
Age	25-34	4.02 (0.3) AB	4.51 (0.5) A	3.00 (0.4) AB	4.59 (0.5) AB
	35-44	3.95 (0.2) AB	4.44 (0.3) A	2.91 (0.5) AB	4.59 (0.2) B
	45-54	4.05 (0.3) AB	4.49 (0.4) A	3.01 (0.6) AB	4.73 (0.4) A
	55-64	4.09 (0.3) A	4.43 (0.4) A	3.24 (0.6) A	4.71 (0.3) AB
	65-74	3.90 (0.2) B	4.48 (0.4) A	2.76 (0.6) B	4.49 (0.4) B
	75-85	3.85 (0.3) AB	4.39 (0.5) A	2.73 (0.5) AB	4.49 (0.5) AB
Education level	<8 years	4.02 (0.3) AB	4.50 (0.3) A	3.05 (0.6) A	4.57 (0.5) A
	8-11 years	4.08 (0.2) A	4.50 (0.3) A	3.18 (0.5) A	4.64 (0.3) A
	≥12 years	3.93 (0.2) B	4.42 (0.5) A	2.81 (0.6) B	4.67 (0.4) A
Type of edentulous space	Single	3.95 (0.2) B	4.43 (0.4) A	2.86 (0.5) B	4.66 (0.4) A
	Partial	4.09 (0.2) A	4.46 (0.4) A	3.26 (0.6) A	4.63 (0.4) A
	Total	3.95 (0.3) B	4.48 (0.4) A	2.82 (0.6) B	4.63 (0.4) A
Prior treatment with prosthodontics	Yes	3.97 (0.2) B	4.45 (0.4) A	2.92 (0.6) B	4.61 (0.4) B
	No	4.15 (0.3) A	4.49 (0.5) A	3.29 (0.5) A	4.77 (0.3) A
Type of prosthodontics	Do not use	4.13 (0.3) A	4.49 (0.6) A	3.27 (0.5) A	4.74 (0.3) A
	Partial removable	4.09 (0.3) AB	4.33 (0.5) A	3.54 (0.6) A	4.47 (0.6) A
	Partial fixed	3.94 (0.2) B	4.44 (0.2) A	2.81 (0.4) B	4.69 (0.2) A
	Complete denture	3.95 (0.3) B	4.50 (0.4) A	2.77 (0.6) B	4.65 (0.4) A
	Implant supported	3.95 (0.2) B	4.48 (0.3) A	2.83 (0.5) B	4.61 (0.4) A
Prosthodontic usage (years)	Do not use	4.15 (0.3) A	4.49 (0.5) A	3.29 (0.5) A	4.77 (0.3) A
	0-5	3.96 (0.2) B	4.51 (0.3) A	2.78 (0.5) C	4.68 (0.4) A
	6-10	4.01 (0.2) AB	4.56 (0.2) A	2.89 (0.6) ABC	4.64 (0.2) AB
	11-20	4.02 (0.2) AB	4.36 (0.4) A	3.23 (0.6) AB	4.55 (0.2) B
	21 or more	3.94 (0.3) B	4.41 (0.4) A	2.92 (0.7) BC	4.57 (0.5) AB

Discussion

The null hypothesis was rejected because the sociodemographic aspects showed to affect patients' perceptions about dental prosthetic treatment (female and lower education showed more risk or a negative view). Moreover, the prosthodontic condition such as partial edentulous space and removable partial prosthesis wearers also showed more risk or a negative view. Not only the questionnaire used in this study[10] but self-reporting in general may reflect in a validated form of the clinical oral condition in a Brazilian context, since people without cognitive deficit have accurately identified conditions such as edentulism and denture use[16].

The majority of the participants were female (66.2%), who presented a more negative perception than males. This result could be related to the fact that women have more concern for health and aesthetics, and these aspects are reflected in the search for procedures which improve these needs such as the use of prosthesis and more demanding treatments. These findings corroborate other studies where females participated the most, i.e. being the gender who most demanded care in prosthetic clinics[10,17,18]. This might be explained by the fact that women have greater aesthetic expectations, and their concern about health is greater than in men[10] or which may be related to women's negative self-perception of oral health[17].

Most of the participants' age ranged between 45-64 (54.2%) years. This finding may be related because normally people tend to lose more teeth over the years, or if the loss is of a unique dental element, especially in the posterior part of the dental arch, the patients tend to neglect seeking treatment. However, as the number of missing teeth increase, patients are more likely to demand treatment[10], but it may also be too late for a simple rehabilitation. For this reason, this study found more partial (35.6%) and total (39.1%) edentulous spaces than single spaces (25.3%). One of reasons why the percentage of the partial and total edentulous in the present study was lower (74.7%) than that found by Leles et al.[10] (92.8%) is probably that some clinics at the Faculty are separated by area and only patients treated with fixed partial prosthesis (single tooth missing) were interviewed on some days.

Another interesting finding is in relation to more negative perception for patients with partial edentulous spaces and removable partial prosthodontic rehabilitation. This might be explained due to the fact that removable partial dentures could be difficult for the patient to adapt to[10], or because females most demanded treatment and this type of rehabilitation often fails in relation to aesthetics[10]. Still, this type of treatment might only have been chosen for financial reasons[19] and it could not be the desired rehabilitation, leading to a negative perception of treatment. An absence of differences was observed among partial fixed, complete dentures, and implant-supported prosthesis for the means of all items. However, the risks or negative consequences scores were higher for the do not use and partial removable denture categories. This might be related to the fact that fixed treatments favor a patient's adaptation, while complete dentures may be easier to adapt to when compared to removable partial dentures, as observed in a previous study[20]. Adaptation by neuroplasticity in oral rehabilitation procedures might explain the improved oral stereognostic ability, defined as the neurosensorial ability of the oral mucosa to recognize and discriminate the object forms in the oral cavity, sensorimotor activity of periodontal receptor, mainly encoding from anterior teeth, and masticatory function[21].

Patients with less education reported to be more afraid, as well patients who never used any type of prosthodontics. These findings were also discussed in previous studies[19] and may be due to the fact that patients are ashamed of or fear dental treatment, with these being some of the reasons for avoiding dental care[19]. Furthermore, maybe their last experience in a dental clinical was bad or the patient had experienced an uncourteous reception by dentists and therefore have avoided facing this situation again[19]. However, Leles et al.[10] (2008) found that positive expectations were higher in

patients with low educational level, perhaps because these patients are not as critical of healthcare in relation to other social and cultural groups.

Meeting patients' expectations is often complex because the majority of them already had previous experiences and have expectations to be fulfilled. In this sense, part of a clinician's job is to clarify doubts and work on accurate prognosis for the proposed treatment. Anxieties such as adaptation to removable or total prosthodontics is one of the points raised by patients after the first contact. Moreover, there are concerns if the rehabilitation will be well adapted or at least will not disturb their phonetics or harm the aesthetics. After the rehabilitation, patients who had already used some type of prosthodontics may feel strange about the new rehabilitation and they do not adapt well to the new treatment. With the intuition to reduce the negative perceptions, Leles et al.[12] (2009) suggested that the active role of patients in making decisions about the proposed prosthodontic treatment is important to obtain positive results, and this makes the patient's expectations more realistic and reduces anxiety and disappointment with the new treatment. Our results agree with Lemos et al.[22] (2013), as their findings suggested that being completely edentulous or wearing non-fixed complete dentures, and regular, poor or extremely bad oral health were important features for negative self-perception of oral health with impact on the volunteer's quality of life[22]. Moreover, the oral health appreciation can be affected by general conditions such as rheumatoid arthritis[23] or local commodities, such as stomatitis[24].

Since this study was carried out in a prosthodontic clinic at a University where the operators were students, good interaction between teacher and student is necessary. Consequently, this good relation should be transmitted to the patient to quell patients' doubts, ambitions and expectations. Thus, the rehabilitation should be well accepted by the patient, aiming to reduce negative perceptions as well as the patients' fear of seeking prosthodontic treatment.

This study has shown that in general, the studied population is aware of the benefits that the prosthetic treatment and of potential negative effects of the no treatment. However, some sociodemographic aspects as female and lower education showed to affect the patient's perception about the dental prosthetic treatment (more risk or negative view). Adequate information about risks of the treatment (negative perception) and consequences of the no treatment are relevant to provide to patients in the first appointment, because variation in the perception was identified in most variables. Moreover, patients' answers about risks ranged closer to the mean values representing a neutral perception (around 3 points), which means not able to inform about the risks or negative perceptions of treatment.

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