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RESEARCH ARTICLE

THERAPEUTIC CHOICE IN THE PROSTHESIS: FACTORS INHERENT TO THE PATIENT

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ABSTRACT

Introduction: The choice of the therapeutic solution in the prosthesis is brieflyexplored field. The purpose of this study is to emphasize on factors influencing and guiding the patients towards a specific therapeutic option. **Material and Methods:** An epidemiological study has been achieved within the Prosthodontic Departments of University Hospital Center Ibn Rochd. It included all patients aged 18 years old and more treated in these departments during two months. The statistical methods used are descriptive. **Results:** The sample studied included 172 patients hosted during the study period with a male / female ratio 0,56.The factors identified as influencing the patient's choice of the therapy were: The functional rendering for 64% of the patients, the practitioner's opinion for 59.3%, the increase in self confidence with the prosthesis for 55.8%; the position of the teeth to be restored for 53.5%; the aesthetic rendering for 52.9%; the cost of the treatment for 51.2%; the desire to have a radical solution for 46.5% and the desire to have a fixed device for 41.9%. Regarding the type of the prosthesis performed; these same factors are found, but in a different order of priority. **Discussion:** The functional rendering represented the major choice criterion for a removable or fixed prosthesis in this studied population as a whole. The main place of the practitioner's opinion could simply reveal the great confidence that the patients had towards their practitioner to guide them towards the best therapeutic choice. Although the cost factor was the sixth factor of choice, it influenced both the patient and the practitioner in this prosthetic therapeutic decision-making. Given that in our background, the socio-economic level of the sample is still limited and the majority of the cost of the prosthetic care are provided by a free medical cover called the medical assistance plan or RAMED, based on the principles of social assistance and national solidarity for the benefit of needy population. **Conclusion:** The shared decision-making should take into account both the practitioner's therapeutic proposals and the aforementioned prosthetic choice factors inherent in the patients. This is part of the permanent apprehension for an improvement in the acceptance and the satisfaction of the prosthetic result by the patient.

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INTRODUCTION

The therapeutic decision-making is a complex process involving several elements; and in the prosthesis, it is articulated around:

- Scientific knowledge: the clinical practicability which takes into account the anatomic physiological situation and the technological elements (Amman *et al*., 2010; Cosyn *et al*., 2012).
- Data specific to the practitioners: their skills, their dexterity, their ability to collaborate and the environment in which they practice (Amman *et al*., 2010).

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- The patient-specific data: current state, personal requirements and preferences (Amman *et al*., 2010; Cosyn *et al*., 2012; Jepson, 1995). The concept of shared decision-making forms a trend in the current clinical practice. The patient and the practitioner form a team that goes through all the phases of the decision-making process (Oates, 1995). The practitioners must afford their patients all the information and advice that will enable them to make an informed choice (Heinikainen, 2002; Leles, 2004), based on their expertise and experience. The factors that define the patient's preferences, what enhance him to choose one option among others, are briefly explored in the prosthesis domain (Ubel, 2010; Amine *et al*., 2016). The practitioner's understanding of these factors could offer new possibilities, so he could give the most relevant advice to the patient and also find the most suitable match between the patient's choice and the one identified by the practitioner (Heinikainen *et al*., 2002). In this concern, our work aims to determine the factors that take into account the patient at time of the therapeutic choice in the prosthesis.

MATERIAL AND METHODS

A descriptive epidemiological study covering a period of 2 months was achieved in the Departments of fixed and mobile prosthesis in the University Hospital Center IBN ROCHD at Casablanca/MOROCCO. It concerned all patients aged 18 years or older, with decayed or absent teeth, requiring prosthetic rehabilitation and having chosen a prosthetic therapeutic solution. This choice was materialized by the signature of the estimate of the prosthetic project. All the patients suffering from multiple chronic pathologies and as a result imposing a limitation of the therapeutic choice such as candidates for the maxillofacial prosthesis, the mentally handicapped or the deaf mutes, and those representing temporal-mandibular disorders requiring no prosthesis were excluded from investigation.

The survey was based on a questionnaire written in French according to data collected in the literature, and completed by the results of a focus group of patients and practitioners. Then, it was translated and adapted trans-culturally into dialectal Arabic based on the method of translation/counter-translation and then validated by a pre-survey of ten representative patients of the sample; the patients concerned by the pre-survey were subsequently excluded from the study. The consent of the patients included in the sample was obtained after an explanation of the various purposes and interests of our study. The questionnaire was administered to the patients by a single investigator who was responsible for transcribing all the answers. Associated with a clinical examination, it allowed us to study several variables of diverse orders:

- Socio-demographic profile: age, sex, monthly income, marital status, educational attainment and social coverage.
- Clinical profile: consisted in the description of the buccal-dental condition and interesting the reason for consultation, the distribution and the situation of the teeth to be restored, the knowledge of the therapeutic options before taking charge, the coordination between the chosen therapeutic option and the desired option, and finally a series of 16 questions about the importance of the factors that may have influenced the choice of the treatment.

  The answers to these 16 questions are written in the form of a 5 level LIKERT SCALE.

RESULTS

The sample consisted of 172 patients aged 18 to 82 years with a male/female sex ratio of 0,56. A modest monthly income was noted in 84.9% of the patients (Table 1). The motivation of consultation was functional for 38.4% of them, aesthetic and functional for 36.6%. The patients in the sample who never had a prosthesis accounted for 57.6%. A preexisting idea about the various credible therapeutic options was present in 39% of the patients. The source of information was mainly related to dentists. The 172 patients were predominantly partially edentulous. The distribution of teeth affected by the prosthetic restorations in the maxilla was about 47.7% in the posterior area and 42.5% in the antero-posterior area; whereas in the mandible it concerned principally the posterior area. The patients who opted for a fixed prosthesis constituted 46.5%; while those who chose a partial or full removable prosthesis constituted respectively 18% and 21.5%; (Table 2). The ultimately chosen therapeutic option agreed with 83.7% of the patients with the option they desired at the beginning. The factors that influence the choice of the type of the prosthetic rehabilitation for the sample taken as a whole have been shown in Table 3. In order of priority they are: the functional rendering, the opinion of the practitioner, the increase of self confidence with the prosthesis, the position of the edentulism, the aesthetic rendering, the cost of the treatment, the desire to have a radical solution and a fixed device. The factors appearing to influence the chosen prosthesis solution are the same regardless of the nature of the prosthesis and the Table 4summarizes these factors.

DISCUSSION

The size of our sample is statistically sufficient to extend the parameters studied to the general population treated within the prosthesis department of the University Hospital Center IbnRochd. However, the generalization of the results must be done in a cautious manner and its expansion cannot be useful for the private sector where such research could give various results. Shared decision making required that the practitioner informed the patient of the advantages and disadvantages of the various alternatives of treatment appropriate to his case, and helped him to evaluate which best fits his preferences. This does not guarantee that the decision will be the most optimal, taken into consideration the complex decision-making process. The patient will have to balance between the cost and benefits of each treatment option and decide by evaluating the various possible results with his preferences. This decision making process are not only rational, but also emotional (Leles, 2011). However, there are a few studies about the factors influencing the patient in his decision to choose or not a prosthetic treatment modality (Amine *et al*., 2016). Our results showed that the choice's factorsof the prosthesis inherent to the patient were in order of importance: the functional rendering, the practitioner's opinion, the increase in self confidence with the prosthesis, the position of the teeth to be restored, the aesthetic rendering, the desire for a definitive solution and a fixed device. The functional rendering was the major criterion for choosing the prosthesis type in our sample.

Table 1. Description of the socio-demographic data in the sample

Parameters	Number -N	Percentage
AGE		
<40 *years old*	52	30.2
41-60 years old	91	52.9
>60 years old	29	16.9
SEX		
Female	110	64
Male	62	36
Monthly income (DH)		
Modest	146	84.9
Medium	14	8.1
High	12	7
Martial situation		
Married	100	58.1
Single	50	29.1
Divorced	16	9.3
widower	6	3.5
Level of studies		
Not specified	1	0.6
Illiterate	51	29.7
Primary	45	26.2
Secondary	42	24.4
Superior	33	19.2
Social covering		
without	21	12.2
with	144	83.7
Others(medical staff)	7	4.1

Table 2. Distribution of the sample according the chosen prosthetic option

Choice	Number -N	Percentage%
Fixed prosthesis	80	46.5
Partial additional prosthesis	31	18
CombinatedProthesis	10	5.8
Fixed prosthesis + additional partial Prosthesis	12	7
Implants	2	1.2
Additional prosthesis	37	21.5
TOTAL	172	100

Table 3. Global distribution of the sample according the factors of choice

Parameters	Certainly		Moderately		Not at all		Doesn't know		Neutral		No response	
	N	%	N	%	N	%	N	%	N	%	N	%
Cost	88	51,2	23	13,4	33	19,2	3	1,7	1	0,6	24	14
Duration of the treatment	19	11	20	11,6	91	52,9	2	1,2	9	5,2	31	18
Need for surgery	12	7	3	1,7	64	37,2	2	1,2	58	33,7	33	19,2
Complexity of the treatment	26	15,1	14	8,1	85	49,4	6	3,5	9	5,2	32	18,6
Pain during the treatment	15	8,7	17	9,9	90	52,3	5	2,9	14	8,1	31	18
Aestheticrendering	91	52,9	12	7	32	18,6	3	1,7	3	1,7	31	18
Functionalrendering	110	64	12	7	15	8,7	2	1,2	2	1,2	31	18
Opinion of the practitioner	102	59,3	11	6,4	25	14,5	0	0	3	1,7	31	18
Desire to have a radical solution	80	46,5	14	8,1	22	12,8	3	1,7	18	10,5	35	20,3
Necessity of periodic control	27	15,7	22	12,8	76	44,2	3	1,7	9	5,2	35	20,3
Feeling more confident with prosthesis	96	55,8	12	7	14	8,1	7	4,1	9	5,2	34	19,8
Localisation	92	53,5	10	5,8	25	14,5	1	0,6	4	2,3	40	23,3
Affection of the neighboring teeth	22	12,8	19	11	65	37,8	2	1,2	24	14	40	23,3
Desire to have a fixed device	72	41,9	5	2,9	14	8,1	0	0	7	4,1	74	43
Difficulty of hygiene	14	8,1	5	2,9	32	18,6	3	1,7	4	2,3	114	66,3
The fact that the prosthesis can be retired to clean it	13	7,6	8	4,7	30	17,4	4	2,3	3	1,7	114	66,3

It could even be considered as a demand for the rehabilitation since 38.4% of the patients consulted for a purely functional reason and 36.6% associated it with an aesthetic motivation. Some studies recognized this as a factor that generated high expectations in the patient before the prosthesis was performed (Johnson *et al*., 2010) or as a factor that greatly influenced the patient approval (Fugazzotto, 2009; Narby *et al*., 2011). The functional criterion was an important factor in the choice of the type of prosthesis. The extent of the edentulism would lead to the choice of a removable prosthesis (Cosyn *et al*., 2012); while the improvement of the quality of life related to the oral health as well as the dental status would rather orientate the choice towards the fixed or implant prosthesis (Ozhayat *et al*., 2009). The opinion of the practitioner was a factor influencing the choice of type of the prosthesis for 58.1% of the patients with partialremovable prosthesis and 76.3% of the patients with fixed prosthesis. These results could be reflected in the high level of confidence that the patients had in their practitioner to guide them towards the best therapeutic choice. This was confirmed by the study of Gilmore *et al*. and by Narby *et al*. (2009) who demonstrated the importance of the dentist's opinion and their suggestions in the patient's

Table 4. Distribution of the sample according the 8 factors of choice identified as influencing the choice of the prosthesis type

	Fixed prosthesis	Partial removablepros thesis	Combinedprost hesis	Fixed + removable prosthesis	Implant	Complete removable prosthesis	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Functionalrendering	59 (73,8)	26 (83,9)	8 (80)	9 (75)	1 (50)	7 (18,7)	110(64)
Opinion of practitioner	61 (76,3)	18 (58,1)	8 (80)	8 (66,7)	1 (50)	6 (16,2)	102(59,3)
Self confidence withprosthesis	57 (71,3)	23 (74,2)	3 (30)	8 (66,7)	2 (100)	3 (8,1)	96 (55,8)
Localization	58 (72,5)	16 (51,6)	7 (70)	10 (83,3)	1 (50)		92 (53,5)
Aestheticrendering	56 (70)	16 (51,6)	4 (40)	9 (75)	1 (50)	5 (13,5)	91 (52,9)
Cost	42 (52,5)	20 (64,5)	5 (50)	8 (66,7)	0	13 (35,1)	88 (51,2)
Desire to have a radical solution	49 (61,3)	17 (54,8)	2 (20)	8 (66,7)	2 (100)	2 (5,4)	80 46,5)
Desire to have a fixeddevice	61 (76,3)		4 (40)	5 (41,7)	2 (100)		72 (41,9)

The gray boxes indicate that the factor in question does not relate to the corresponding type of the prosthesis

decision-making process. The regaining of self-confidence ensured by the prosthetic rehabilitation allowing the restoration of the aesthetic facial appearance, occupies the third place in order of importance in the factors of choice inherent to the patients. This factor represents a real motivation for the patients, which was supported by Leles *et al*. (2016) and was even the most important factor according to Narby *et al*. (2009). The position of the teeth to be restored is a factor influencing 53.5% of the patients. Also, its importance was a current requirement in the patients (Gilmore *et al*., 2006). The natural appearance of prosthetic teeth was, after the cost, the most important reason for choosing or rejecting a prosthetic treatment for Leles *et al*. (Amine *et al*., 2016). However, examining the motivation of our patients to consult, the aesthetic didn't occupy so much space, only 18% had purely an aesthetic motivation, 38.4% had a functional motivation of control and 36.6% aesthetic and functional. These data were consistent with the findings of a study previously carried out on the same departments (Ubel, 2010).

This could be explained by the low socio-economic level of the patients studied. Indeed, in the populations with limited means if the treatment was linked to a functional need, the use of family financial means was perceived as legitimate, whereas it was less justified if the treatment was directed at the aesthetics (Narby *et al*., 2012). Numerous studies identified the cost as the ultimate influencing factor in the choice of the therapeutic option (Amine *et al*., 2016; Siqueira *et al*., 2013; Melescanuimre *et al*., 2011).We would therefore expect to see it crowning above other factors, given the socio-economic profile of our patients, of which 84,9% belong to the modest classes. Yet, only 51.2% of our total sample recognized it as a criterion of choice. The majority of our patients (69,8%) were covered by the "RAMED" Medical assistance plan, which provides free medical care. Some patients under "RAMED" are initially limited by their choice because the types of prosthesis they covered doesn't necessarily correspond to their desires which are constrained by the cost representing a powerful decision-making factor where the influence appeared in the low number of the patients who performed implants as it doesn't exceed 1.1% of the sample (Amine *et al*., 2016; Narby *et al*., 2007). In our background the patients with limited resources, an implant treatment affects both the patient and the practitioner. The latter modulates its practice according to the socio-economic context of the population and directs the discussions on the possible treatments among those perceived as within the reach of the patient.

Indeed, for a completely edentulous mandible, the supra-implantary prosthesis reinforced by 2 implants is considered as the standard solution of the prosthetic rehabilitation (Trulsson *et al*., 2002; Amine *et al*., 2016; Melescanuimre *et al*., 2011) which should gradually become the first choice of treatment of the toothless mandible. In this case (in which case the therapeutic solution was obvious), the needy patient, which presents himself with residual peaks favorable to the complete additional prosthesis, suggested a complete additional prosthesis. It corresponded to the clinical situation and the socio-economic level of the patient (often fully covered by RAMED).

Moreover, it would be unlikely that a patient would choose a therapeutic option that he knew he couldn't afford the case of the implant (Graham *et al*., 2006). The desire to have a radical solution is an important criterion in our sample; it was associated with the desire to have a fixed device in 41.9% of the studied population. It would seem that this is due, firstly, to the higher psychological benefits of the fixed prosthesis compared to the removable (Amman *et al*., 2010; Jepson *et al*., 1995) and, on the other hand, to the requirements of more frequent visitsof supervision in case of wearing removable prosthesis (Spear, 2009). The desire to have a fixed device is considered as a crucial criterion for choosing the prosthesis option (Amine *et al*., 2016).

Conclusion

The effective patient-practitioner collaboration in the choice of the prosthetic therapeutic decision is increasingly becoming the standard in the practice of modern dentistry. The shared decision making must be the result of a therapeutic compromise between factors inherent to the practitioner, such as the clinical situation specific to each patient, the limit of competence, and the scientific knowledge and factors of choice inherent to the patients who are in order of importance : functional rendering, the opinion of the practitioner, the increase in self confidence with the prosthesis, the position of teeth to be restored, and the rendering aesthetics, the cost, the desire for a radical solution and a fixed device. Given that the patients treated at University hospital center IbnRochd have the characteristics of their own, it would be appropriate to do similar studies with patients in the private sector or other public or semi-public dental centers to better explore these data.

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