A survey of complete denture teaching in brazilian dental schools

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ABSTRACT

Educational principles related to clinical and technical procedures taught to undergraduate students of dentistry play an important role in the professional development of future clinicians and in the quality of service given to their patients. The present study reports a survey of undergraduate Complete Denture teaching in Brazilian Dental Schools. A comprehensive survey questionnaire containing objective questions related to materials and techniques used in complete denture construction, pedagogic methods and working conditions, was sent to 84 dental schools and 59 of them(70%) provided the answers. The results showed relatively uniform pattern regarding the several clinical and technical stages of complete denture treatment and there are remarkable differences concerning working conditions provided by Brazilian dental schools. Some variation in the taught procedures were mainly due to the readiness and cost of the material or merely personal preferences. An extensive discussion among teachers regarding complete denture teaching is needed in order to improve educational conditions in undergraduate level.

UNITERMS

Complete denture; dental schools; teaching; prosthodontics.

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RESUMO

Os princípios educacionais, relacionados aos procedimentos clínicos e técnicos ensinados aos alunos de graduação em odontologia, têm um papel importante no desenvolvimento profissional dos futuros clínicos e na qualidade dos serviços prestados a seus pacientes. O presente estudo relata um levantamento do ensino de prótese total, para graduação, em faculdades de odontologia brasileiras. Um questionário abrangente, contendo perguntas relacionadas a materiais e técnicas usados durante a confecção de próteses totais, métodos pedagógicos e condições de trabalho, foi enviado para 84 faculdades e 59 das mesmas (70%) providenciaram as respostas. Os resultados mostraram um padrão relativamente uniforme relacionado aos diversos estágios clínicos e técnicos do tratamento por próteses totais que há diferenças relativas às condições de trabalho providas pelas faculdades brasileiras. Alguma variação nos procedimentos lecionados se deu principalmente por causa da disponibilidade e custo dos materiais ou meramente por preferências pessoais. Uma discussão ampla entre professores, a respeito do ensino de prótese total, é necessária para melhorar condições educacionais da graduação.

UNITERMOS

Prótese total; faculdades de odontologia; ensino; prostodontia.

INTRODUCTION

Educational principles related to clinical and technical procedures taught to undergraduate students of dentistry play an important role in enhancing the professional development of future clinicians and in the quality of service given to their patients.

In a similar way to other areas of dentistry, the treatment of edentulous patients might present great variations regarding its theoretical foundations, clinical procedures and materials used. Since complete denture teaching is dynamic and in constant

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evolution, the objective of developing a standard curriculum is, undoubtedly, a hard task.

On the other hand, recurring evaluations of these teaching methods must be done, searching for technical and scientific improvement of what is being taught. Based on those goals, in 1969 and 1970, Levin & Sauer [3,4] carried out a questionnaire investigation of the conducts applied to the making of complete denture taught to undergraduate students in 55 dental schools of the United States and Canada. They noticed great divergences among the participants concerning to clinical and technical proceeding, decreasing number of teachers, lack of supporters, and limited schedule of the disciplines.

In 1985, Levin & Sanders [2] updated the previously obtained data (1969-70), in order to evaluate possible progresses and how these changes affected teaching and clinical practice transmitted to dental students. The results showed significant improvements, even though a reduction of hours in the curricular schedule, reduction in student/teacher proportion and a decreasing interest of students and professionals regarding complete denture had been observed.

Although these conditions denoted by previous studies might represent learning practices in developed countries, at a definite stage of science evolution, they may not reflect a common actuality. Developing countries, like Brazil, present a cultural and socio-economical reality that has substantial effects on many areas of education, including teaching conditions. Consequently, adaptations to particular difficulties and regional peculiarities might be associated to the application of widely accepted techniques and teaching methods.

Considering these problems, more strictly localized analysis of complete denture would be of great help to reveal the contemporary status of teaching and learning process, as well as homogenization of terminology for researches and publications. Thus, the aim of the present study is to identify how complete denture is being taught and practiced among Brazilian dental schools and what working conditions are offered to teachers and students.

MATERIALS AND METHOD

A questionnaire was sent through the mail to the chief professor of Complete Denture discipline of all Brazilian Schools of Dentistry listed at the Brazilian Education and Culture Govern Department (year 1997), summing up 84 dental schools. To facilitate answering, questionnaires were sent with a pre-paid answer envelope addressed to the sender. A presentation letter accompanied the mail survey questionnaire, which cleared up the objectives of the survey and emphasized the importance of an immediate response to the questions.

The questionnaire consisted of various objective questions, related to the following items:

1. materials and techniques used for impressions (anatomic and functional), casts, impression trays and baseplates;
2. determination methods of occlusal plane, vertical dimension and centric relation, selection of artificial teeth and clinical trials conduct;
3. laboratory procedures and insertion of complete dentures;
4. teaching methods and internal organization.

After a two-month interval, 25 answered questionnaires were received (29,8%). In order to increase the number of responses, at this time, a reminder letter was sent to the non-respondent schools stressing the importance of their participation and the urgency of returning the answered questionnaire. Afterwards, other 34 surveyed schools were included, totalizing 59 (70%). The geographic distribution of these schools is shown in Figure 1 and Table 1.

As the questionnaires were being received, the answers were classified and transposed to a database for future tabulation and analysis. It was only included for analysis mailed surveys received within the limit of three months after the sending of the last group of questionnaires.

FIGURE 1 – Geographic location of the surveyed Brazilian dental schools (n=84).

Table 1 – Geographic distribution of the surveyed Brazilian dental schools (n=84).

Regional location	Total number of schools	Number of respondents
South-East	46	32
South	16	12
North-East	14	10
Middle-West	6	4
North	2	1
Total	84 (100%)	59 (70%)

Results And Discussion

The received questionnaires were analyzed according to the subject to which the questions referred and are described subsequently in Figures 2, 3 and 4.

Due to the limitations imposed by the type of evaluation (mailed survey), the number of schools that answered the questionnaire (70%) can be considered satisfactory, and is comparable to a similar study done by Levin & Sauer,[3] in 1969, in which a rate of 60% of answers (33 schools) was accomplished.

Considering the questionnaire itself, it could be observed that, concerning the materials used for the construction of complete dentures, there is certain standardization among Brazilian dental schools. Although some variations exist, which are common in clinical practice, those variations are mainly due to the readiness and cost of the material or merely personal preferences rather than philosophical or pedagogical conducts.

In relation to preliminary and functional impressions, it is well known that the final quality of the obtained impression is much more linked to the molding technique and ability of the operator than to the material used. Although other clinical factors can also influence in this context such as the mucous membrane resilience and the degree of resorption of the residual ridges, clinical judgement is extremely important in the selection of the material and impression technique for each clinical case.

The gypsum type more commonly used for a functional cast was the dental stone (62,7%), although the material recommended for that purpose is the high-strength dental stone (dental stone type II)[1] probably due to facilitate complete denture deflasking after its processing. In addition, the great part of the participants construct baseplates using acrylic resin (98,3%), they use only acrylic resin artificial teeth (94,6%) and articulate casts using semiadjustable articulators (93,2%).

According to the described clinical and technical procedures, the majority always carries out custom-made impression tray relief (71,2%), molds with selective pressure (59,3%), performs border impression (86,4%) and correction of the functional impression when needed (83,1%). The Academy of Prosthodontics[1] makes specific recommendations regarding some of these procedures, recommending selective pressure, functional border impression and use of semiadjustable articulator. However there was not unanimity in relation to the questions of the answered questionnaires.

On the other hand, some procedures didn't present a uniform pattern. Only 43,9% routinely perform impression disinfection, 40,7% carry out Patterson's method, and only 50,8% verify compression areas using disclosing paste.

The occlusal plane is more often determined using the planes of Camper and Fox (78%), even though the association of those references with aesthetic criteria (64,4%) is customary. The association of methods is also common in the determination of vertical dimension - method of Willis (74,6%), phonetic (72,9%), aesthetic (57,6%) and metric (33,9%) - and in the determination of the centric relation - unstrained guided method (54,2%), tongue retruding (45,8%) and swallowing threshold (45,8%).

The selection of artificial teeth is, in general, carried out measuring the distance between the labial commissures (83%), combined with the form of the patient's face (76,3%) and the sex/personality/age factors (66,1%).

Only a few recommend the presence of patient relatives during aesthetic trial section (28,8%) and 45,8% transmit oral and written instructions in the insertion day. The totality of participants achieves control appointments after denture insertion.

Most of the participants recommend a bilateral balanced occlusion as the ideal occlusal pattern in complete dentures (89,5%). This occlusal scheme is widely accepted by complete denture users, although there is not an universally accepted occlusion concept, based on scientific evidences.[1] Similarly, the remount of the processed dentures is recommended, even though only 58,6% use this conduct.

Applied didactic methods include theoretical and practical classes (98%), and practice is divided into laboratorial and clinical activities (97%). Only 45,8% of the schools do not appeal to commercial laboratories in any stage of denture construction, which is just accomplished inside of the university.

Regarding working conditions, a great disparity was observed in relation to number of teachers (one out of 9), and technical personnel (none out of 6). Regarding the teacher/student ratio by practical activity, the average is 13 students for one teacher, with a variation between 5 and 40.

The presented results reveals a relatively uniform pattern in the majority of clinical and laboratorial procedures of complete denture treatment, similar to what is recommended by the Academy of Prosthodontics.[1] Besides this, it was observed remarkable differences concerning working conditions provided by Brazilian dental schools. These differences are certainly due to structural features like financial support or professional qualification.

It can be considered that there is a need of an enfolding discussion regarding the treatment of edentulous patients among teachers from different educational institutions, in order to share experiences and improve educational conditions in undergraduate level.

Table 2 - Questions related to materials used for construction of complete dentures.

Question	Answer	n	Percent
Materials used for preliminary impression*	Compound	20	34,5%
	Alginate	10	17,2%
	Both	28	48,3%
Material used for final impression	Zinc oxide-eugenol paste	53	89,83%
	Silicone rubber	19	32,2%
	Alginate	4	6,8%
	Compound	5	8,5%
	Others	9	15,2%
Material used for border molding**	Compound	46	78,0%
	Wax	9	15,3%
	Zinc oxide-eugenol paste	8	13,6%
Material used for final cast	Dental stone	37	62,7%
	High-strength dental stone	22	37,3%
Material used for baseplates	Modeling plastic compound	0	0%
	Acrylic Resin	58	98,3%
	Both	1	1,7%
Types of artificial teeth*	Acrylic resin	53	94,6%
	Porcelain	1	1,8%
	Both	2	3,6%
Use of articulator	Partially adjustable	55	93,2%
	Fully adjustable	1	1,7%
	Rigid	3	5,1%

*excluding missing data
** admit more than one alternative (total exceeds 100%)

Table 3 – Questions related to technical and clinical procedures.

Question	Answer	n	Percent
Carry out relief on individual impression tray?	No	5	8,5%
	Yes	42	71,2%
	Sometimes	12	20,3%
Carry out border molding?	Yes	51	86,4%
	No	4	6,8%
	Not always	4	6,8%
What kind of pressure is elected during impression?**	Mucostatic	16	27,1%
	Some pressure	10	16,9%
	Selective pressure	35	59,3%
Carry out corrections on the final impression?	Yes	49	83,1%
	No	10	16,9%
Is the patient advised to leave the dentures out of the mouth before the final impression?	Yes	13	22,0%
	No	46	78,0%
Carry out boxing of the final impression before pouring?	Yes	45	76,3%
	No	7	11,9%
	Sometimes	7	11,9%
Carry out disinfection of impressions?*	Yes	25	43,9%
	No	32	56,1%

Table 3 – Questions related to technical and clinical procedures (conclusion).

Question	Answer	n	Percent
How is the occlusal plane determined?**	Height of the retromolar pad	18	30,5%
	Camper and Fox Plane	46	78,0%
	Aesthetic	38	64,4%
	Dividing the interarch space evenly	12	20,3%
How is vertical dimension determined?**	Pleasure's Method	20	33,9%
	Phonetics	43	72,9%
	Parallelism of the ridges	3	5,1%
	Aesthetics	34	57,6%
	Willis device for facial measurement	44	74,6%
	Others	12	20,3%
Carry out Patterson's method for determination of compensation curves?	Yes	24	40,7%
	No	35	59,3%
How is centric relation determined?**	Interocclusal records	12	20,3%
	Graphic records	5	8,5%
	Dawson's Method	7	11,9%
	Unstrained guided Method	32	54,2%
	Method	27	45,8%
	Tongue retrusion	27	45,8%
	Deglution	3	5,1%
	Others		
How are all artificial teeth selected?**	Measuring the distance between the labial commissures	49	83,0%
	1/16 of the bizygomatic distance as the width of the central incisor	2	3,4%
	Preextraction records	8	13,6%
	Using the patient's old denture	8	13,6%
	Aesthetic judgement	21	35,6%
	Evaluation of existing space between the ridges	10	16,9%
	Contour of occlusal rim	10	16,9%
	Artistic norms	2	3,4%
How is the anterior teeth shape selected?**	Face form	45	76,3%
	Sex-personality-age factors	39	66,1%
	Preextraction records	8	13,6%
How is vertical dimension verified?**	Aesthetic evaluation	28	47,5%
	Phonetic evaluation	47	79,7%
Is the patient advised to be accompanied by relatives or friends during trial denture visit?	Yes	17	28,8%
	No	27	45,8%
	Sometimes	15	25,4%
Are areas of compression examined with use of disclosing paste?	Yes	30	50,8%
	No	29	49,2%
What kind of instructions do the patient receive at the denture insertion visit?	Oral instructions only	24	40,7%
	Written instructions	8	13,6%
	Both	27	45,8%
Carry out control appointments after denture insertion?*	Yes	58	100%
Are dentures remounted after laboratory processing?*	Yes	34	58,6%
	No	24	41,4%
What kind of eccentric occlusion is advised?*	Bilateral balanced occlusion	51	89,5%
	Canine guidance	1	1,7%
	Group function	5	8,8%

*excluding missing data

** admit more than one alternative (total exceeds 100%)

Table 4 – Questions related to discipline program, teaching methodology and discipline organization.

Question	Answer	n	Percent
Didactic activities (I)*	Lecture and practice	58	100%
Didactic activities (II)*	Clinical only	1	1,7%
	Clinical and preclinical laboratory	57	98,3%
Where are performed the laboratory	In commercial laboratories	20	33,9%
processing of the clinical cases?*	Within the dental school	27	45,8%
	Both	11	18,6%
Total number of teachers	Minimum	1	
	Maximum	9	
	Mean	3,7	
	Median	3	
Number of technicians	Minimum	0	
	Maximum	6	
	Mean	1,9	
	Median	2	
Teacher/student ratio in preclinical	Minimum	1:5	
and clinical activities	Maximum	1:40	
	Mean	1:13	

Conclusion

Based on the participation of 70% of Complete Denture Disciplines from different educational institutions, we can assure that:

- There is a relatively uniform pattern regarding the several clinical and laboratorial stages of complete denture treatment;
- There are remarkable differences concerning working conditions provided by Brazilian dental schools.

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