

Prosthetic experience of teaching and learning of fabrication of removable partial denture among the Nigerian Dental Schools

Adenuga-Taiwo OA¹, Akinboboye BO², Awotile AO¹

¹ Department of Restorative Dentistry, Faculty of Dentistry, College of Medicine, Lagos State University Ikeja, Lagos, Nigeria.

² Department of Restorative Dentistry, Faculty of Dental Sciences, College of Medicine, University of Lagos Idi-Araba, Lagos, Nigeria.

Correspondence: Adenuga-Taiwo OA

E-mail: ben.ataiwo@gmail.com

Abstract

Objective: Partial edentulism is as a result of increased risk of caries and other factors with resultant tooth loss, which would require replacement with fixed or removable prosthesis (RPD). RPD is mostly used and its training of fabrication would require student and teachers involvements.

The aim of this study is to investigate the methods used to teach removable partial denture prosthodontics to undergraduate dental students in Nigeria dental schools with the purpose of ascertaining efficiency, uniformity and proffering solutions.

Materials and Method: This descriptive cross sectional study was carried out in seven (7) Nigerian dental schools across the country from April to June 2018. Structured questionnaires were distributed among teachers, laboratory technologists and 500/600 level students in each of the dental school through hand-delivery and postal system. Inclusion and exclusion criteria were observed in this study. Ethical approval was obtained from Health Research Ethics Committee, Lagos State University Teaching Hospital. The data obtained from the study were analysed using descriptive statistics with the aid of SPSS (IBM version 20).

Results: One hundred and eleven completed questionnaires were returned (55%) from the students out of the two hundred questionnaires distributed. Fifteen laboratory technologists (57.7%) and eleven lecturers (42.3%) responded. About 77% out of all the universities selected responded, (seven out of ten dental schools). The proportion of lecturers and technologists satisfied with their method of teaching and assessment was 53.8%.

Conclusion: There was no uniformity in methods of RPD teaching and learning in the various dental schools in Nigeria with reduced clinical work undertaken because of inadequate provision of human and material resources.

Key words: Teaching, learning, uniformity, communication, fabrication of dentures

Introduction

In healthcare sector, training of students and staff are part of continuous professional development to maintain professionalism and provision of satisfactory safety and care for our patients in the community. Effective clinical teaching requires not just clinical skills on the part of the instructors but also knowledge of general principles of teaching and learning¹.

Teaching and learning practices can transform a novice dental student into a competent and professional oral health care provider, which is important to dental educators and facilitators². In Medicine and Nursing professions, student learning and participation in clinical practice is well documented, whereas in Dentistry, no literature was found to relate clinical transformation of students³.

In UK, the teaching of removable partial denture (RPD) design for partially edentulous patients is provided to undergraduate dental students from the second year of their study⁴. This was mended in the new curriculum as designed by the General Dental Council 'The first five years'⁶ to

accommodate the time delay between the end of the course and when students start treating their first partial denture patient as seen in the old curriculum. The General Dental Council (GDC), in their publication 'The first five years'⁶, state that dental students should be competent at designing effective indirect restorations, complete and partial dentures. Competence is defined by the GDC as meaning 'Students should have a sound knowledge and understanding of the subject together with an adequate clinical experience to be able to resolve clinical problems encountered, independently or without assistance'¹.

There is also documented poor contemporary attitudes and communication between dentist and technician⁵. This problem is evident between the newly qualified dentists and the technicians as seen in the general practices. The newly qualified dentists are also perceived not to have a good understanding of technical procedures as a result of lack of exposure to equip them in effective communication with personnel in dental laboratory⁷⁻¹².

In majority of papers, lack of education and adequate

training of RPDs design in dental schools are responsible for the inadequacy in the knowledge and skills experienced by the new graduates in addition to poor communication skills¹¹. A team approach to RPD design planning with the clinicians engaging the technicians is more welcoming but a previous study noted that denture designs and surveys were delegated to technicians by the clinicians resulting in a long-standing problem¹⁴.

Another¹⁵ study showed that the older qualified dental surgeons were more likely to provide designs that were understood by the technician than those surgeons who were newly qualified. According to studies conducted by the British Society for the Study of Prosthetic Dentistry (BSSPD) members on the design of a mandibular partial denture, it was found in the exercises conducted that there were no consensus¹⁶. This highlights the problem of achieving a uniform opinion of what constitutes an optimum design for RPD cases and this inevitably leads to difficulties in the teaching of RPD design to undergraduate BDS Students.

There is a need to improve on the teaching, considering the global increase in population and change in diet preference to more refined food. This implies that there will be increased risk of oral diseases mainly caries and resultant tooth loss¹⁶, and increase in population of those with partial edentulism¹⁷. Treatment options for partial edentulism include removable partial denture, bridge, implant, but removable partial denture is the commonest (due to reduced cost and less invasion of oral tissue)¹⁸. The focus of healthcare is reduction in cost and importance of treatment outcomes.

To achieve desired outcome that meets expectation of patients, it is necessary that adequate training on partial denture therapy be ensured especially among our students¹⁹. The aim of this paper is to investigate the methods used to teach removable partial denture prosthodontics to undergraduate dental students in Nigerian dental schools with the purpose of ascertaining efficiency, uniformity and making recommendations. The result of this study will help in suggesting a uniform and effective method of teaching skills and technique of RPD fabrication in teaching hospitals.

Materials and Methods

This was a descriptive cross sectional study conducted in the following schools: Lagos State University Dental School, University of Lagos Dental School, University College Hospital Dental School, Ibadan, Obafemi Awolowo University Dental School, Ife, University of Benin Dental School, Bayero University Dental School, Kano and University of Port-Harcourt Dental School. The ten Nigerian dental schools were selected out of which seven responded as stated above. Each of these schools had research assistant to coordinate the administration of the questionnaire. This questionnaire was self-administered and sent by hand delivery or post. This was carried out over a period of 3 months from April to June 2018.

Convenient sampling techniques was adopted to select 500 and 600 level BDS students at each of the seven (7) Nigerian

dental schools. Total students recruited in each school depended on the overall dental students population at each level. Students were provided with a learner's questionnaire to complete, containing factual and opinion questions. This questionnaire gives the student information on their educational journey in removable prosthetics at their schools.

Similarly, their teachers in the field of prosthetic dentistry were given teachers' questionnaires to complete with factual and opinion questions. These included all prosthetic teachers and demonstrators in prosthetic laboratories in each of the dental schools. The inclusion criteria for the study included dental students in 500 and 600 levels at the selected dental schools, who were willing to fully understand and comply with the verbal and written instructions provided, and teachers in Restorative Department.

The questionnaires were distributed to the students and teachers by hand delivery to each dental school coordinator at the Nigerian Society for Restorative Dentist Biannual Conference. The coordinators were teachers who participated in the dental conference, and were briefed on the protocol of study. This was followed by email to remind the coordinators of the obligation of the students and teachers to complete the questionnaires at the stipulated time. All the completed questionnaires were collected by the coordinators at each dental school, and forwarded by hand delivery or special postal delivery. Recipients were reassured of anonymity.

Ethical approval was obtained from the LASUTH Health Research Ethics Committee, Ikeja Lagos. Verbal and written consents were obtained from the students and teachers. Information sought from structured questionnaire included method of teaching, method of demonstrations and use of information technology in teaching²⁰. The data obtained was analysed using SPSS package (IBM version 20). Continuous data was represented using mean and standard deviations, while Categorical data was represented using frequency and percentages.

Sample size estimation

$$n = \frac{z^2 pq}{d^2}$$

Where:

n = the desired sample size

z = the standard normal deviate which corresponds to the 95 percent confidence level (or 5% significant level) = 1.96

p = the proportion of the Nigeria student who have removable partial denture experience = 15.0%²¹

q = 1.0 - p

d = degree of accuracy desired, set at 0.05

$$n = \frac{1.96^2 \times 0.15 (0.85)}{(0.05)^2}$$

n = 195.9 with 5% attrition (9.8) 206 participants were recruited.

A minimum sample size of 195.9% was calculated. The sample size was increased to 206 to allow for non-respondents and incompletely filled questionnaires.

Results

The participants that comprise this study sample were 26 trainers and 111 students, which were made up of 500 and

Table 1: Socio-demographics

	Trainer Frequency (%)	Student Frequency (%)
Gender		
Male	23(88.5%)	61 (55%)
Female	3 (11.5%)	50 (45%)
Age		
21-30	8(30.8%)	107 (96.4%)
31-40	15(57.7%)	4 (3.6%)
>50	3(11.5%)	-
Marital Status		
Single	10(38.5%)	106(95.5%)
Married	16(61.5%)	5 (4.5%)
Training		
Dental Student	-	109 (98.2%)
First Degree	2(7.7%)	2 (1.8%)
BDS	3(11.5%)	-
FWACS/FMCDS	20(77.0%)	-
Others	1(3.8%)	-
Institution		
OAU	2(7.8%)	-
LASU	4(15.4%)	14(12.8%)
UI	5(19.2%)	26(23.9%)
UNILAG	6(23.1%)	26(23.9%)
UNIPORT	3(11.5%)	43(39.4%)
UNIBEN	3(11.5%)	-
BAYERO	3(11.5%)	-
Ethnicity		
Yoruba	17(65.4%)	52(46.8%)
Hausa	2(7.7%)	22(19.8%)
Others	7(26.9%)	37(33.3%)
Religion		
Christianity	22(84.6%)	93(83.8%)
Islam	3(11.5%)	17(15.3%)
Others	1(3.9%)	1 (0.9%)

Key Note:

- OAU- Obafemi Awolowo University Dental School
- LASU-Lagos State University Dental School
- UI- University of Ibadan Dental School
- UNILAG- University of Lagos Dental School
- UNIPORT-University of Port Harcourt Dental School
- UNIBEN-University of Benin Dental School
- Bayero University Dental School

Table 2: Teaching methods

Satisfaction with teaching method	Trainer Frequency (%)	Student Frequency (%)
Yes	14 (53.8%)	58 (52.3%)
No	58 (52.3%)	30(27.0%)
Unsure	-	-
22(19.8%)		
Other answers	-	1(0.9%)
Reason for no satisfaction		
Stressful laboratory procedure	-	11(9.9%)
Time constraints	-	19(17.1%)
Lack of prosthetic materials	5(19.2%)	-
Increase in the number of students	(30.8%)	-
Insufficient manpower (lab technologist)	1(3.8%)	-
All the reasons stated above	9 (34.6%)	-
Missing	3(11.5%)	81(73.0%)
Demonstration using simulator		
Yes	-	42(37.8%)
No	-	64(57.7%)
Unsure	-	4(3.6%)
Other answers	-	1(0.9%)
Demonstration using Video		
Yes	-	24(21.6%)
No	-	81(73.0%)
Unsure	-	4(3.6%)
Other answers	-	2(1.8%)
Demonstration through hands on experience		
Yes	-	65(59.1%)
No	-	41(37.3%)
Unsure	-	2(1.8%)
Other answers	-	2(1.8%)

600 level students as shown in (Table 1). Originally, 50 questionnaires were distributed to the trainers and 200 to the students. This sample size calculation did not reflect on the actual number of participants in the study. This was due to the following reasons -failure to distribute some of the questionnaires to the different institutions, failure to complete the questionnaires by the participants, failure to indicate the institution of participation and failure to give consent by some participants.

The average age was 25±1.67 years and 80% were trainers with FWACS/FMCDS.

In the teaching method assessment, it was found out that

Table 3: Reasons for reduced RPD Fabrication in Clinics and Laboratory

Reasons	In the Clinic		In the Laboratory	
	Frequency(%)	Mean(%)	Frequency(%)	Mean(%)
No patient	14(33.3%)	11.1%	25(54.3%)	18.1%
Strike Action	12(28.6%)	9.53%	19(41.3%)	13.76%
Training Ongoing	16(38.1%)	12.7%	2(4.3%)	1.43%
Total	42(100%)	33.3%	46(100%)	33.29%

Table 4: Knowledge about RPD Fabrication

Good perception about the learning experience to help in the learning experience to help in the RPD	Frequency	Percent
Strongly disagreed	10	9.0
Disagreed	9	8.1
Neutral	45	40.5
Agreed	30	27.0
Strongly agreed	11	9.9
No response	6	5.4
Total	111	100.0
Quality of Impression needed for RPD	Frequency	Percent
Strongly disagreed	2	1.8
Disagreed	10	9.0
Neutral	50	45.0
Agreed	37	33.3
Strongly agreed	6	5.4
No response	6	5.4
Total	111	100.0
Competency in RPD Design	Frequency	Percent
Yes	47	42.3
No	33	29.7
Unsure	30	27.0
Other Answers	1	0.9
Total	111	100.0
Technical work for the stages in RPD processing	Frequency	Percent
Yes	51	45.9
No	47	42.3
Unsure	13	11.7
Total	111	100.0

53.8% were satisfied with the teaching method. The percentage of those not using teaching aid such as simulator (57.7%) and video demonstration (73%) were above average. At the undergraduate dental school level, the amount and teaching content received by the students were reflected in the staff: student ratio among the dental schools in the areas of clinical, laboratory demonstrations and hands-on activities as seen in one school the ratio was low as 1:3 and as high as 1:14 in another (Table 2).

The average denture design done in the clinic (33.30%) and laboratory (33.29%) is shown in (Table 3). The reasons that affected the number of dentures produced in the clinics and laboratory included strikes among the dental professionals, reduced number of patients due to high cost of treatment and accessibility, and ongoing training pathway (Table 3). The quality of impression was satisfactory (88.5%) as shown in (Table 4). The average number of RPD'S fabricated and

Table 5: Prosthetic experience of students

Learning experience in diagnosis and treatment	Frequency	Percent
Yes	77	69.4
No	12	10.8
Unsure	22	
Total	111	100.0
Design of RPD	Frequency	Percent
0	36	32.4
1 - 5	3	2.7
6 - 10	26	23.4
11 - 15	15	13.5
16 - 20	9	8.1
> 21	11	9.9
Missing	11	9.9
Total	111	100.0
Number of RPD fabricated and fitted	Frequency	Percent
0	29	26.1
1 - 5	7	6.3
6 - 10	17	15.31
11 - 15	15	13.51
16 - 20	11	9.9
>21	20	18.0
Missing	12	10.8
Total	111	100.0
Number of RPD made in combination of Complete denture	Frequency	Percent
0	44	39.6
1	5	4.5
2	8	7.2
3	7	6.3
4	1	0.9
5	8	7.2
6	3	2.7
7	7	6.3
8	1	0.9
10	3	2.7
11	1	0.9
Missing	23	20.7
Total	111	100.0
Exposure to principle of Exposure to principle of	Frequency	Percent
Yes	52	46.8
No	43	38.7
Unsure	15	13.5
Other answers	1	0.9
Total	111	100.0
Prosthetic case handled involving ACT & RPI Systems	Frequency	Percent
Yes	10	9.0
No	95	85.6
Unsure	6	5.4
Total	111	100.0

Key Note:

RPD=Removable Partial Denture
 ACT=Altered Cast Technique
 RPI= Rest Proximal plate I -bar

fitted by students was 6 leaving the percentage of dentures fabricated and fitted by students as 14.14% (Table 5).

Discussion

In this study, the teaching of removable partial denture was mostly done at the 500 and 600 levels in Nigerian dental schools. This is a contrast to other dental schools across the world most especially in the European countries where most of the students are exposed to removable partial denture teaching over the last three clinical years of the programme²⁷. This exposure affords students to have treated sufficient number of patients requiring removable partial denture and gain enough knowledge and experience to qualify and satisfy the General Dental Council requirements⁴. The result from this study showed variations in the teaching of removable partial denture with the commonest challenge being stressful laboratory procedures, and other challenges were time constraints, lack of materials, increased number of students using available facilities and the least was insufficient manpower basically that of laboratory technologists. This results in students not meeting their clinical requirements prior to the final Bachelor of Dental Surgery examination.

Many dental practitioners obtain their knowledge and skills through educational experiences gained at undergraduate dental schools²³. The effects of variation in the amount and content of teaching received at the undergraduate dental school level have consequences at post-graduation of the students. This is reflected in the course duration, and staff: student ratio for clinical, laboratory demonstrations and hands-on activities. In one school, it was low as (1:3) and as high as (1:18) in another. These findings provided evidence on the current demand on "modern dental education", with increased dental student numbers, limited availability of staff and increased pressure on existing facilities both in the clinics and laboratories^{24,25}.

Similarly, this variation in the teaching of removable partial denture has been noted in modern restorative dentistry such as the teaching of posterior composite restorations^{26,27}. In some Nigerian dental schools, the didactic teaching of the dental students has been supported with use of videos, simulators, demonstration and observation of procedures in the laboratories similar to some dental schools in the western countries. These are indicated most especially when these dental schools are challenged with insufficient resources, and thereby providing the students with alternate method of teaching.

Furthermore, it was found that the responses in the design of removable partial denture in both the clinics and laboratories were almost similar in the number of designs though some were challenged with reduced number of patients coming to the clinics due to either strike actions or socio-economic problems, which would have direct effects on the laboratory procedures and outcomes. However, the students responded to their learning experience in the diagnosis and treatment plan for RPD but lacked experience when exposed to clinical cases indicated for altered cast technique and RPI system. This would require demonstration with adequate teaching and supervision from their clinical teachers.

Moreover, the number of RPDs fabricated and fitted by the

dental students appeared to be low similar to the findings from another study²⁸ where the median number of cobalt-chromium removable partial dentures completed by their undergraduate dental students were three. This finding explains why there has been divergence from clinical guidelines for provision of this type of removable partial denture in the general dental practices in some European countries where National Health Service²⁹ operates with restricted remuneration, and the practitioner's lack of clinical application of RPD during their clinical training in the dental schools and beyond³⁰.

In addition, most of the removable partial dentures fabricated and fitted in all the dental schools were made of acrylic materials³¹. These are cost effective and affordable by the patients. However, the vast majority of these are tissue borne and tend to cover much more of the gingival margins, endangering the periodontal tissue, supporting potential of greater plaque accumulation in already susceptible patients⁴. Therefore, majority of the dental schools would retain these acrylic dentures with clasps on abutment teeth where appropriate; this would not follow the clinical guidelines designed by the British Society for the Study of Prosthetic Dentistry^{32,33} that assume that all removable partial dentures have metal frameworks.

As complete edentulousness becomes less common, patients who are edentulous in only one jaw are becoming commonly seen in our clinics and would need a complete denture to oppose natural dentition or partially edentulous jaw. Among the students respondents in this present study, few of these complete dentures were made in addition to RPDs. This finding is similar to a previous study³⁴ where problems were encountered with this combination ranging from lateral occlusions to reduction in occlusal vertical dimension of the denture.

This study has highlighted the problems encountered by both the teachers and learners in terms of teaching methods, the variation in the curriculum trends, availability of dental materials and equipment and provision of clinic and laboratory facilities. In comparison with other dental schools globally, the Nigerian dental schools are ill resourced but could be better if other ways of funding and managing them are explored to maintain good clinical standards.

Conclusion

There was no uniformity in methods of RPD teaching and learning in the various dental schools in Nigeria. There was also reduced knowledge, exposure in altered cast and RPI system, which are essential in RPD fabrication, suggesting lack of efficiency in learning experience. However, fabrication of acrylic removable partial denture was popular in all dental schools in Nigeria.

Recommendation

The prosthetic dental curriculum needs to be reviewed to maintain uniformity in the teaching methods and effective teaching skills and techniques. Dental materials and equipment should be made available and accessible for the

fabrication of metal RPDs.

There should be adequate number of prosthetic teachers and assistants in each of the dental schools to enhance the clinical training of the students.

References

1. Lynch CD, Allen PF. Why do dentists struggle with removable partial denture design? An assessment of financial and educational issues. *Br Dent J* 2006; 200:277-281.
2. McGarry TJ, Jacobson TE. The professions of dentistry and dental laboratory technology improving the interface. *J Am Dent Assoc* 2004; 135:220-226.
3. Petropoukis VC, Rashedi B. Removable partial denture education in US dental schools. *J Prosthodont* 2006; 15:62-68.
4. Barsby M J, Schwarz W D. A survey of the teaching of partial denture construction in dental schools in the United Kingdom. *J Dent* 1979; 7: 1-8. 12.
5. General Dental Council. The first five years. *The undergraduate curriculum*. 3rd edition, London: G Dent Council, 2008.
6. Juszczyk AS, Clark RK, Radford DR. UK dental laboratory technicians views on the efficacy and teaching of clinical-laboratory communication. *Br Dent J* 2009; 206:532-533.
7. Eldred M. Who is qualified to design? *Br Dent J* 2008; 205:67-69.
8. Lynch CD, Allen PF. Quality of written prescriptions and master impressions for fixed and removable prosthodontics: a comparison study. *Br Dent J* 2005; 198:17-21.
9. Allen PF, Jepson NJ, Doughty J, Bond S. Attitudes and practice in the provision of removable partial dentures. *Br Dent J* 2008; 204:54.
10. Lynch CD, Allen PF. The teaching of removable partial dentures in Ireland and the United Kingdom. *Br Dent J* 2007; 203: 9.
11. Lynch CD, Allen PF. Quality of materials supplied to dental laboratories for the fabrication of cobalt chromium removable partial dentures in Ireland. *Eur J Prosthodont Rest Dent* 2003; 11:176-180.
12. Lynch CD, Allen PF. A survey of chrome-cobalt RPD design in Ireland. *Int J Prosthodont* 2003; 16:362-364.
13. Garfoot B. Improving communication-partial denture design 2006. <http://www.fgdp.org.uk/journals/tip/content.html>.
14. Basker RM, Davenport JC. A survey of partial denture design in general practice. *J Oral Rehabil* 1978; 5:215-222.
15. Walters JD. A study of partial denture designs produced by an alumni group of dentists in health service practice. *Eur J Prosthodont Rest Dent* 1995; 3:135-139.
16. Odusanya SA. Tooth loss among Nigerians: causes and pattern of mortality. *Int J Oral maxillofac Surg* 1987; 16: 184-189.
17. Akinboboye B, Azodo C, Soroye M. Partial edentulism and unmet prosthetic needs amongst young adult Nigeria. *Odontostomatol Trop* 2014; 37:47-52.
18. Fayad, Mostafa, I. Baig, Mohamed N. Alrawail, Abdulrazaq M (2016-12-01). "Prevalence and pattern of partial edentulism among dental patients attending College of Dentistry, Aljouf University, Saudi Arabia". *J Int Soc Prev Community Dent* 6 (9). doi: 10.4103/2231-0762.197189.
19. Knezovic, Z. Celebic A. Valentic-Peruzovic M. Jeolmov V. Panduric J. A survey of treatment outcomes with removable partial dentures. *J Rehabil*; 2003:847-854.
20. Bethlehem, J. (2009). *Applied survey methods: A statistical perspective*. Hoboken, NJ: Wiley.
21. Pellizaar EP, Almeida DA, Falcon-Antenucci RM, Sanchez DM, Zuim PR, Verri FR. Prevalence of removable partial dentures users treated at the Aracatuba Dental School- UNESP Gerodontol 2012; 29:140-144.
22. Plasschaert AJM, Holbrook WP, Delap e, Martinez C, Walmsley AD. Profile and Competencies for the European Dentist. *Eur J Dent Educ* 2005; 9:98-107.
23. Wilson NHF, Dunne SM, Gainsford ID. Current materials and techniques for direct restorations in posterior teeth. Part 2: resin composite systems. *Int Dent J* 1997; 47:185-193.
24. Lynch CD, McConnell RJ, Wilson NHF. Teaching posterior composites in US dental schools. *J Am Dent Asocs* 2006; 137:619-625.
25. Lynch CD, McConnell RJ, Wilson NHF. Challenges to teaching posterior composites in the United Kingdom and Ireland. *Br Dent J* 2006; 201:747-750.
26. Kay EJ, O'Brien KD. Academic dentistry- where is everybody? *Br Dent J* 2006; 200:73-74.
27. Lynch CD, McConnell RJ, Wilson NHF. The teaching of posterior composite resin restorations to undergraduate dental students in Ireland and the United Kingdom. *Eur J Dent Edu* 2006; 10:38-43.
28. Lynch CD, Allen PF. The teaching of removable partial dentures in Ireland and the United Kingdom. *Br Dent J* 2007; 203: 9.
29. Lynch C D. Why do dentists struggle with partial denture design? *Br Dent J* 2006; 200: 277-281.
30. Clark R K F. *Prevention in prosthodontics*. Singapore Dent J 1984; 9: 5-10.
31. Zoidis P, Papathanasiou I, Polyzois G. The use of a modified poly-ether-ketone (PEEK) as an alternative framework material for removable dental prostheses. A clinical report. *J Prosthodont* 2016; 25:580-4.
32. The British Society for the Study of Prosthetic Dentistry. *Guides to standards in prosthetic dentistry and implant dentistry*. London: Quintessence, 1996.
33. The British Society for the Study of Prosthetic Dentistry. *Guidelines in prosthetic dentistry and implant dentistry*. London: Quintessence, 2005.
34. Nairn, R I, Cuttress T W. Changes in mandibular position following removal of the remaining teeth and insertion of immediate complete dentures. *Br Dent J* 1967; 122: 303-306.