

## Rest seat preparation for removable partial dentures: Does professional dental practice reflect undergraduate teaching?

Enrique Fernández, DDS, MA, MEd,<sup>a</sup>Paula Padilla, DDS, MEd,<sup>b</sup>Diego Jazanovich, BDS, MFDS RCS Eng., MFGDP(UK), DipClinEd, CELTA,<sup>c</sup>Daniela Albers DDS, MSc,<sup>d</sup>Hernán Acosta, DDS,<sup>e</sup>Carolina Benavides, DDS,<sup>f</sup>Pablo Alexander Sarabia-Álvarez, DDS, MBA, Dip(Cariology)<sup>g</sup>

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

<sup>a</sup>Specialist in Oral Rehabilitation, Assistant Professor, Faculty of Dentistry, Universidad San Sebastián, Santiago, Chile.

<sup>b</sup>Specialist in Oral Rehabilitation, Assistant Professor, Faculty of Dentistry, Universidad San Sebastián, Santiago, Chile.

<sup>c</sup>Head of Education Office and Lecturer, Faculty of Dentistry, Universidad Finis Terrae, Santiago, Chile.

<sup>d</sup>Lecturer in Biostatistics, Dental School, Universidad Mayor, Santiago, Chile

<sup>e</sup>Clinical Lecturer, Faculty of Dentistry, Universidad San Sebastián, Santiago, Chile.

<sup>f</sup>Private Practice, Santiago, Chile.

<sup>g</sup>Associate Professor, Faculty of Dentistry, Universidad Pedro de Valdivia, Santiago, Chile.

Corresponding author:

Dr. Alexander Sarabia

Faculty of Dentistry, Universidad Pedro de Valdivia

Av. Ejército Libertador 171, Santiago, Chile

[alexander.sarabia@hotmail.com](mailto:alexander.sarabia@hotmail.com)

**ACKNOWLEDGEMENTS:** The authors thank all dental technicians and laboratory staff who kindly participated in this study.

**ABSTRACT: Statement of problem.** Dental publications worldwide have reported discrepancies between how removable partial dentures are taught at undergraduate level and how these clinical procedures are performed extramurally, particularly regarding rest seat preparation. Considerable gaps have already been documented between undergraduate teaching and actual implementation in dental practice.

**Purpose.** The aims of this study are to evaluate the presence of mouth preparation (cingulum and/or occlusal rest seats) before fabrication of cast removable partial dentures and explore causes that may contribute to and result in discrepancies between what is taught at undergraduate level and what is later on practiced by qualified dentists. The tested null hypothesis was that there is no difference between the frequency of working casts with and without rest seat preparations evaluated by dental laboratories in our study.

**Material and Methods.** 103 laboratories were identified through an internet search strategy. Each laboratory was subsequently telephoned to determine if they provided cast metal removable partial dentures. Only 36 laboratories were shortlisted and out of these only 24 agreed to take part in our study. Three establishments did not fulfil our inclusion criteria leaving an overall 21 dental laboratories to participate in this study. Laboratory staff were calibrated to inspect, detect, and record the presence or absence of cingulum and/or occlusal rest seats in working casts before fabrication of metal frameworks for removable partial dentures over a one-month period. All 21 calibrated laboratories were given a proforma spreadsheet to record the presence or absence of at least one rest seat preparation per model before fabrication of metal frameworks. Statistical analysis was performed with StataCorp software by using the binomial probability test of 1 sample.

**Results.** A total of 1,512 working casts were inspected and 630 (41.70%) displayed rest seat preparations ( $P < 0.001$ ). The remainder 58.30% of casts examined (882) had no rest seat preparations. Only two laboratories recorded over 80% of casts with rest seat preparations and eight laboratories recorded rest seat preparations in 20% of working casts, or less.

**Conclusions.** Lack of rest seat preparation highlights a rather large proportion of dentists performing inadequate mouth preparation before removable partial denture fabrication. Interacting factors might include shortcomings in undergraduate curricular design for removable partial prosthodontics and a contemporary socioeconomic and cultural burden on the dental profession. These implications for dental education beg the question of how to implement and deliver curricular content emphasizing duty of care and ethics for future generations of competent dental practitioners.

### CLINICAL IMPLICATIONS

The results from this study confirm a vast majority of dental practitioners do not perform suitable pre-prosthetic mouth preparation with regard to rest seats. This has a direct clinical impact on removable partial prostheses hindering successful oral rehabilitation, which is most likely to result in further damage to remaining hard and soft dental tissues.

### I. INTRODUCTION

Removable partial dentures (RPDs) are still a widespread and suitable treatment option for partially edentulous patients. Dental publications worldwide have reported discrepancies in the way RPDs are taught at undergraduate level in contrast with how such clinical procedures are performed outside dental school—particularly when it comes to rest seat preparation for RPDs, expressing with concern a considerable gap between what is taught at undergraduate level and what is indeed implemented in dental practice.

Prospective analyses have shown a substantial growth in populations and an extended life expectancy that may contribute to an increased prevalence of partially dentate adults by the year 2020<sup>1</sup>. In Chile, the Ministry of Health (MINSAL) has predicted a similar situation<sup>2</sup>. Whether due to biologic, economic, or cultural reasons RPDs are still considered an appropriate treatment for partial edentulism worldwide for a wide range of clinical situations<sup>3</sup>. Despite the fact that dental laboratory technicians need to perform certain phases within the manufacture of cast RPDs, consensus has clearly set the irreplaceable role of dentists throughout all stages in their making<sup>3,4</sup>. The critical involvement of dentists is related to the appropriate treatment planning phase, which includes prosthetic design, surveying of diagnostic casts and pre-prosthetic mouth preparation<sup>5</sup>. Following a strict protocol becomes crucial when making cast RPDs to over ensure a successful treatment outcome and prevent deleterious effects on oral health and supporting structures brought about by dental caries and periodontal diseases<sup>3,6</sup>.

Research has reported that dentists are often negligent of fundamental principles in the fabrication of cast RPDs and thus impressions for working casts are recurrently sent to dental laboratories without any mouth preparation, nor written instructions for denture design<sup>3,4,6,7</sup>. Non-compliance for suitable mouth preparation may just be the tip of the iceberg in a lack of due diligence and professionalism<sup>8</sup>. The aims of this study are to evaluate the presence of mouth preparation (cingulum and/or occlusal rest seats) before fabrication of cast RPDs and explore causes that may contribute to and result in discrepancies between what is taught at undergraduate level and what is later on practiced by qualified dentists. The tested null hypothesis ( $H_0$ ) was that there is no difference between the frequency of working casts with and without rest seat preparations evaluated by dental laboratories in our study.

### II. MATERIALS AND METHODS

An internet search identified 123 dental laboratories in Santiago, the capital city of Chile, and each laboratory was subsequently contacted by telephone to ascertain if they provided cast metal RPDs. Only 36 laboratories proved to provide such service and out of these only 24 agreed to take part in our study. All establishments gave their written informed consent to participate.

Ten (5 mandibular and 5 maxillary) gypsum stone working casts were replicated and poured (Chrom IQ Dental Alginate, LASCOD Spa); (Elite Stone, Zhermack). These corresponded to different Kennedy-Applegate classes and were selected by one operator (EF) and divided into 3 groups:

- A. 5 casts with proper rest seat preparations according to McCracken<sup>5</sup>;
- B. 2 casts with notches or grooves; and
- C. 3 casts without any preparation.

The aim of calibration was to assess the ability for laboratory technicians to correctly detect the presence or absence of rest seats in working casts. Casts in group B were specifically used in order to distinguish between correct and incorrect rest seat preparation identification throughout the calibration process.

All 10 casts were randomly shown to every laboratory technician involved in this study. Technicians had to identify and record those models with prepared rest seats, those with grooves or notches and those without preparation. For a laboratory to be included in our study at least 80% of casts had to be correctly classified by dental technicians. Three laboratories were discarded, whereby fewer than 8 out of 10 sites were correctly identified resulting in 21 laboratories participating in total (N=21). Figure 1 illustrates the sample selection and calibration process.

All 21 calibrated laboratories were given a proforma spreadsheet to record the presence or absence of at least one rest seat preparation per model before fabrication of metal frameworks. After calibration and selection of participating laboratories, another operator (ASA) delivered 3 study cast replicas from each of the groups previously mentioned (A, B, and C) to every laboratory as a source of reference should any doubts arise when classifying their own casts. Data were recorded for one month and after completion of data sheets, our team collected and analyzed them by using StataCorp software (version 14.2, Lakeway Drive College Station, TX). The binomial probability test of 1 sample was used and statistical significance was found between the number of prepared and unprepared models ( $P<0.001$ ).

This study was performed according to the guidelines laid out in the Declaration of Helsinki and all procedures were approved by the Ethics Committee of the Faculty of Dentistry at Universidad San Sebastián, Chile (certificate # 2019-71).

### III. RESULTS

All 21 participating laboratories handled a total of 1,512 casts ( $n=1,512$ ) from working impressions sent for the manufacture of cast metal RPDs. Only 41.70% of casts (630) ( $P<0.001$ ) displayed evidence of mouth preparation by means of at least one occlusal or cingulum rest. The remainder 58.30% of casts inspected (882) had no rest seat preparations (Fig. 2).

It is worth highlighting that only 2 laboratories recorded over 80% of casts with rest seat preparations. Perhaps more alarmingly so, 8 laboratories recorded presence of rest seat preparation in 20% of working casts, or less, received from dental practitioners for cast metal RPDs. The distribution of casts per laboratory is shown in Figure. 3.

### IV. DISCUSSION

According to our data the null hypothesis is rejected, indicating there is a difference between the frequency of working casts with rest seat preparations assessed at all dental laboratories in our study and those without preparation. Our results mirror and support those from previous research<sup>9-12</sup>. We consider our approach has obtained a reliable source of information regarding the presence or absence of rest seat preparations. Whereas findings from previous studies have focused mainly on undergraduate and postgraduate students, our research includes dental practitioners<sup>6</sup>. Others have shown dentists seldom do any tooth preparation before definitive impression making for cast RPDs, sending unprepared master casts straight to dental laboratories, which clearly does not lead to properly executed cast removable prostheses. Over half of working casts inspected in our study for cast metal RPDs had no rest seat preparation whatsoever.

Similarly, a large proportion of general dental practitioners fail to implement essential principles in removable prosthodontics and delegate the responsibility of prosthetic design and planning to dental laboratory technicians<sup>3,4,10</sup>. This situation does not seem to have changed significantly over time<sup>3</sup>. In Chile, our results point in the same direction despite unequivocal legislative and ethical viewpoints that consider these matters to be an exclusive responsibility of dental practitioners<sup>3,4</sup>.

The outcomes of our study reinforce the idea that we are faced with a somehow deeply rooted behavior that disregards not only essential principles in removable partial prosthodontics, but also a lack of duty of care by practitioners towards their patients<sup>13</sup>. This has led our quest and attempt to identify what factors seem to be responsible. While it is true that the primary objective of this study is to evaluate the presence of mouth preparation by means of cingulum and/or occlusal rest seat preparation fabrication of RPDs, our results encourage exploring what potential reasons might be leading to such behavior. We look at these in the following sections.

#### Curriculum

One of the reasons that possibly explains this discrepancy between theory (i.e. what should be done) versus actual dental practice may be an inadequate content or coverage in undergraduate dental curricula<sup>3</sup>. Although clinical

skills are necessary, they are not the only factor in what is a far more complex reality in undergraduate training. The number of hours allocated for developing skills in RPDs, as well as the minimum number of prostheses to be made by students throughout their undergraduate course can be relatively scarce. On average, in the USA students have to make 3 units (1 unit = 1 arch) and 2 units in the UK<sup>14,15</sup>. Although no national figures are yet available in Chile, students at our dental school require completion of 4 units throughout their undergraduate training.

In addition, surveying of casts when designing RPDs is an essential skill that needs to be undertaken by the dental practitioner, but despite reports in the USA that students at every dental school use a surveyor for the design of RPDs<sup>16</sup> very few actually develop the necessary skills to do so<sup>3</sup>. Then, maybe curricular design of undergraduate teaching should include more allocated time for this.

### **Dental Implants and Commercialism**

Undoubtedly, the advent of osseointegrated implants and their validation as a dental treatment alternative in the early 1990s played a major turning point in dentistry, which brought about a tacit association of removable prostheses as second-class restorations. However, we need to bear in mind that on a global scale the overall percentage of people with access (whether biological, physical, or financial) to implant-based restorative treatment is low<sup>17,18</sup>.

Unquestionably, RPDs present a lower source of income returns for providers compared to dental implant treatments. Chambers wrote: “We have underestimated the extent to which dentists are the victims of commercialism”, emphasizing the nature of “high-profit services while ignoring comprehensive care”<sup>19</sup>. Nevertheless, other studies on this issue do not consider economic variables as a determinant. Instead, they indicate postgraduate education as a more relevant variable<sup>4</sup>. Hence, the ubiquitous offer of implant postgraduate courses and degrees, and a notoriously abating limelight for removable partial denture prosthodontics seem to be contributing to a catastrophic relegation of removable partial denture making to dental technicians in spades<sup>17,20,21</sup>.

Insufficient teaching at undergraduate level and postgraduate education programs mainly focused on dental implants have resulted in RPDs to be demoted and devalued to procedures of mere technical character. The 2006 Ethics Summit on Commercialism, jointly sponsored by the American Dental Association and the American College of Dentists, highlighted the damaging effects of “pervasive, rising, and multifactorial commercialism” on professionalism<sup>8</sup>.

### **Professionalism**

Consideration of the aforementioned factors alone does not completely answer our understanding for shortcomings in professionalism, which is not a simple concept to articulate<sup>22,23</sup>. A lack of focus on teaching attitudes and values in contrast to teaching cognitive and psychomotor skills underlies something perhaps far more serious as knowledgeable and skilled clinicians in dentistry are needed, but knowledge and skills alone are not enough to ensure high quality oral healthcare. Empathy in the care for patients has been described extensively in the literature<sup>24,25</sup>. According to Nash, “literature about empathy discusses the interactivity between “emotional” and “cognitive” aspects of empathy, with the dimension of emotional empathy being understood as sharing feelings comparable to those being experienced by other, and the cognitive aspect of empathy as intellectually taking the perspective of the other”<sup>24</sup>. Graduates should apply their skills with moral integrity, providing suitable and high-quality care for patients.

In other words, professionalism needs to be taught and assessed as part of the undergraduate curriculum<sup>26</sup> throughout the dental course. Coulehan stated: “a profession without its own distinctive moral convictions has nothing to profess”<sup>27</sup>, an argument that certainly leads to a relatively new and somewhat neglected field in dental teaching.

In the USA, Sherman and Cramer reported that empathy levels drop at some point during the second year of dental training and remain at lower levels throughout undergraduate studies, which is coincidentally the same year when dental students start treating patients<sup>28</sup>. Paradoxically, in dental and medical undergraduate courses, the moment students start treating patients marks the downward spiral in empathy that might have been otherwise safeguarded through a holistic approach to healthcare and not just merely teaching students to focus on the delivery of items of service where undergraduates tend to focus far more on procedure completion than patient needs<sup>28,29</sup>. It seems professionalism is perhaps most unimportant and expendable from a curricular standpoint and “ethical erosion” has been noted as students progress through their undergraduate dental and medical programs<sup>8</sup>.

Overloading students with clinical requirements can also have other detrimental effects such as burnout syndrome<sup>30-35</sup>. Therefore, a requirement-driven environment at many dental schools encourages students to be procedurally focused rather than patient-centered and significantly diminishes meaningful learning opportunities for students<sup>36</sup>.

There is a compelling argument to reinforce teaching professional ethics in the dental curriculum. Courses in professional ethics should help students make better moral decisions<sup>24,37</sup>. Consequently, it is crucial to teach ethics steadily throughout the entire undergraduate course and not in isolation, where the hidden curriculum also plays a key role in developing student professionalism<sup>8,38</sup>.

Assessment of professionalism should reflect the multidimensional aspect of student learning<sup>(8)</sup>. Rational clinical practice requires dental student awareness of their patients as more than just gums and teeth, whereby ethics and professionalism must be an integral part of the dental curriculum<sup>39</sup>. The role of dental schools in fostering an environment of academic integrity is key<sup>40</sup>. The collaboration of other professional bodies and institutions in so doing should be synergistic in this respect.

Despite the limitations of this study, our results reveal a commonplace and unacceptable status quo in dental practice: delegating responsibilities to dental technicians that should concern first and foremost dentists.

## V. CONCLUSIONS

This study shows that the majority of dental professionals in the capital of Chile do not perform adequate mouth preparation in terms of cingulum or occlusal rest seats for cast metal removable partial dentures. This lack of professionalism results not only in a breach of ethicolegal issues that also involve dental technicians, but in adverse effects on patients' health.

Multiple factors seem to affect this behavior pattern, which has been reported elsewhere, where a combination of shortages in curriculum design for removable partial prosthodontics and steady teaching and assessment of ethics and professionalism at undergraduate level co-exist. Qualified dental professionals need to approach care in a holistic way and the dental profession as a whole, in collaboration with other institutions, should be synergistic in combatting commercialism.

## REFERENCES

- [1]. Douglass CW, Shih A, Ostry L. Will there be a need for complete dentures in the United States in 2020? *J Prosthet Dent.* 2002;87:5–8.
- [2]. Ministry of Health. Comprehensive Oral Health for Adults aged 60: Clinical Guide [Internet]. 2010th ed. Santiago, Chile: MINSAL; 2010. Available from: <https://www.minsal.cl/portal/url/item/7221747c2c9484b7e04001011f0141a4.pdf>
- [3]. Farias-Neto A, Silva RSG da, Diniz A da C, Batista AUD, Carreiro A da FP. Ethics in the provision of removable partial dentures. *Brazilian Journal of Oral Sciences.* 2012;11:19–24.
- [4]. Lynch CD, Allen PF. Why do dentists struggle with removable partial denture design? An assessment of financial and educational issues. *British Dental Journal.* 2006;200:277–81.
- [5]. Carr A, Brown D. McCracken's Removable Partial Prosthodontics - 13th Edition [Internet]. [cited 2020 Feb 11]. Available from: <https://www.elsevier.com/books/mccrackens-removable-partial-prosthodontics/carr/978-0-323-33990-2>
- [6]. Neto AF, Duarte ARC, Shiratori FK, de Alencar e Silva Leite PH, Rizzatti-Barbosa CM, Bonachela WC. Evaluation of senior Brazilian dental students about mouth preparation and removable partial denture design. *J Dent Educ.* 2010;74:1255–60.
- [7]. Basker RM, Davenport JC. A survey of partial denture design in general dental practice. *Journal of Oral Rehabilitation.* 1978;5:215–22.
- [8]. Masella RS. Renewing professionalism in dental education: overcoming the market environment. *J Dent Educ.* 2007;71:205–16.
- [9]. Taylor TD, Matthews AC, Aquilino SA, Logan NS. Prosthodontic survey. Part I: Removable prosthodontic laboratory survey. *J Prosthet Dent.* 1984;52:598–601.
- [10]. Vult von Steyern P, Widolf-Kroon R, Nilner K, Basker RM. Removable partial denture design habits in general dental practice in Sweden. *Swed Dent J.* 1995;19:205–11.
- [11]. Wolfaardt JF, Tan HK, Basker RM. Removable partial denture design in Alberta dental practices. *J Can Dent Assoc.* 1996;62:637–44.
- [12]. Radhi A, Lynch CD, Hannigan A. Quality of written communication and master impressions for fabrication of removable partial prostheses in the Kingdom of Bahrain. *J Oral Rehabil.* 2007;34:153–7.
- [13]. General Dental Council (UK). Preparing for Practice - Dental team learning outcomes for registration (2015 revised edition) [Internet]. General Dental Council, UK; 2015. Available from: [https://www.gdc-uk.org/docs/default-source/ore-part-2/preparing-for-practice-\(revised-2015\).pdf?sfvrsn=2a7660b9\\_2](https://www.gdc-uk.org/docs/default-source/ore-part-2/preparing-for-practice-(revised-2015).pdf?sfvrsn=2a7660b9_2)



- [14]. Petropoulos VC, Rashedi B. Removable partial denture education in U.S. dental schools. *J Prosthodont.* 2006;15:62–8.
- [15]. Clark RKF, Radford DR, Juszczak AS. Current trends in removable partial denture teaching in British dental schools. *Br Dent J.* 2011;211:531–5.
- [16]. Rashedi B, Petropoulos VC. Preclinical removable partial dentures curriculum survey. *J Prosthodont.* 2003;12:116–23.
- [17]. Carlsson GE. Some dogmas related to prosthodontics, temporomandibular disorders and occlusion. *Acta Odontol Scand.* 2010;68:313–22.
- [18]. Carlsson GE. Some issues related to evidence-based implantology. *J Indian Prosthodont Soc.* 2016;16:116–23.
- [19]. Chambers DW. Commercialism in dentistry and its victims. *J Am Coll Dent.* 2006;73:2–3.
- [20]. Taylor TD. The changing face of implant dentistry. *Int J Oral Maxillofac Implants.* 2003;18:793.
- [21]. Zitzmann NU, Hagmann E, Weiger R. What is the prevalence of various types of prosthetic dental restorations in Europe? *Clin Oral Implants Res.* 2007 Jun;18 Suppl 3:20–33.
- [22]. Taylor C, Grey NJA, Checkland K. Professionalism... it depends where you're standing. *Br Dent J.* 2017;9:222:889–92.
- [23]. Bateman H, Ellis J, McCracken G. Professionalism in undergraduate dental education: a pause for thought. *Br Dent J.* 2019;227:1025–7.
- [24]. Nash DA. Ethics, empathy, and the education of dentists. *J Dent Educ.* 2010;74:567–78.
- [25]. Reuter M, Felten A, Penz S, Mainzer A, Markett S, Montag C. The influence of dopaminergic gene variants on decision making in the ultimatum game. *Front Hum Neurosci.* 2013;7:242.
- [26]. Orsini CA, Jerez OM. Establishing a good dentist-patient relationship: skills defined from the dental faculty perspective. *J Dent Educ.* 2014;78:1405–15.
- [27]. Coulehan J. Viewpoint: today's professionalism: engaging the mind but not the heart. *Acad Med.* 2005;80:892–8.
- [28]. Sherman JJ, Cramer A. Measurement of changes in empathy during dental school. *J Dent Educ.* 2005;69:338–45.
- [29]. Hojat M, Vergare MJ, Maxwell K, Brainard G, Herrine SK, Isenberg GA, et al. The devil is in the third year: a longitudinal study of erosion of empathy in medical school. *Acad Med.* 2009;84:1182–91.
- [30]. Campos JADB, Jordani PC, Zucoloto ML, Bonafé FSS, Maroco J. Burnout syndrome among dental students. *Rev Bras Epidemiol.* 2012;15:155–65.
- [31]. Galán F, Ríos-Santos J-V, Polo J, Rios-Carrasco B, Bullón P. Burnout, depression and suicidal ideation in dental students. *Med Oral Patol Oral Cir Bucal.* 2014;19:e206-211.
- [32]. Deeb GR, Braun S, Carrico C, Kinser P, Laskin D, GolobDeeb J. Burnout, depression and suicidal ideation in dental and dental hygiene students. *Eur J Dent Educ.* 2018;22:e70–4.
- [33]. Stormon N, Ford PJ, Kisely S, Bartle E, Eley DS. Depression, anxiety and stress in a cohort of Australian dentistry students. *Eur J Dent Educ.* 2019;23:507–14.
- [34]. Basudan S, Binanzan N, Alhassan A. Depression, anxiety and stress in dental students. *Int J Med Educ.* 2017;8:179–86.
- [35]. Divaris K, Mafla AC, Villa-Torres L, Sánchez-Molina M, Gallego-Gómez CL, Vélez-Jaramillo LF, et al. Psychological distress and its correlates among dental students: a survey of 17 Colombian dental schools. *BMC Med Educ.* 2013;13:91.
- [36]. Rogers CR. *Client centered therapy: its current practice, implications and theory*; [New ed.]. London: Constable; 2003. 560 p.
- [37]. Callahan S, Bok S. *Ethics Teaching in Higher Education* [Internet]. Springer US; 1980 [cited 2020 Feb 11]. (The Hastings Center Series in Ethics). Available from: <https://www.springer.com/gp/book/9781461331407>
- [38]. Ssebunnya GM. Beyond the hidden curriculum: The challenging search for authentic values in medical ethics education. *South African Journal of Bioethics and Law.* 2013;6:48–51.
- [39]. Bebeau MJ. Enhancing professionalism using ethics education as part of a dental licensure board's disciplinary action. Part 1. An evidence-based process. *J Am Coll Dent.* 2009;76:38–50.
- [40]. Alcota M, Gauna PR de, González F. Professionalism in dental education. *RevistaFacultad de Odontología Universidad de Antioquia* [Internet]. 2016 Dec 16 [cited 2020 Feb 11];28. Available from:<https://aprendeenlinea.udea.edu.co/revistas/index.php/odont/article/view/23623>

FIGURES

Fig. 1. Search, calibration and dental laboratory selection strategy.

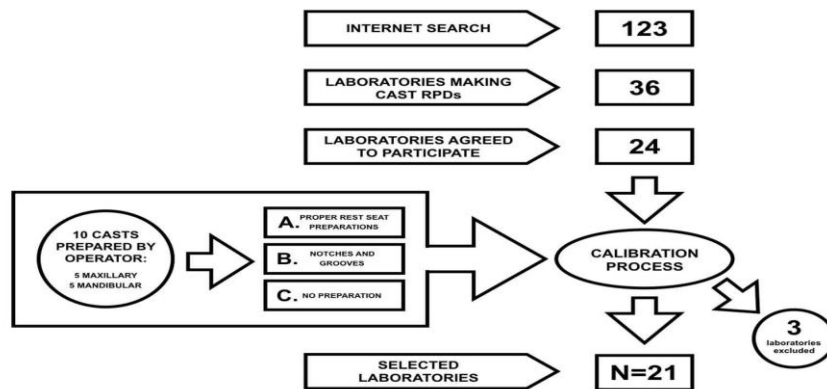


Fig. 2. Frequency of presence and absence of rest seat preparation.

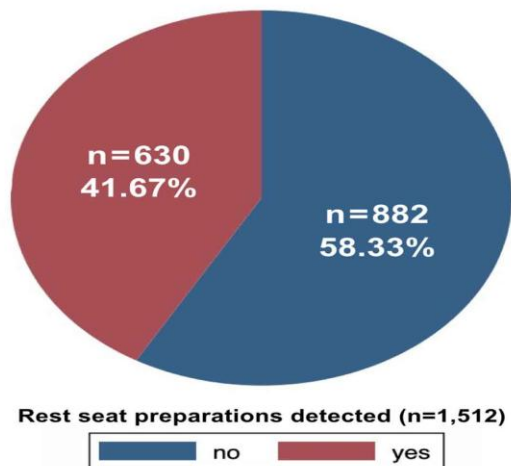


Fig. 3. Distribution of working casts per laboratory showing presence and absence of rest seat preparation.

