

PAPER REF: 6936

CAD/CAM EDUCATION IN DENTAL MEDICINE COURSES OF PORTUGAL AND SPAIN

Marina Marques¹, Filipe Araújo¹, Patrícia Fonseca^{1,3}, J.C. Reis Campos^{2,3}, André Correia^{1,3}

¹Universidade Católica Portuguesa/ Health Sciences Institute of Viseu, Viseu, Portugal.

²Faculty of Dental Medicine of the University of Porto, Portugal

³LAETA/INEGI, University of Porto, Porto, Portugal

(*)*Email*: acorreia@viseu.ucp.pt

ABSTRACT

Aim: to analyse how CAD/CAM technology is included in the dental education curricula of dental schools in Portugal and Spain. **Methods:** a survey was distributed by e-mail to all Professors of Prosthodontics in Higher Education Institutions of Dental Medicine in the Iberian Peninsula. Response rate was 48% (total: 12 institutions). **Results:** CAD/CAM technology is covered in the training of future Dentists in the Iberian Peninsula, although at a reduced level. Most of students have access to CAD/CAM systems, within the Institution. However, in Portugal it is used only in specific situations, while in Spain it is used more routinely. The most common CAD/CAM materials used in Portugal are lithium disilicate, zirconia and metals. In Spain, it is also used alumina, leucite, feldspathic ceramics and composites for indirect restorations.

Although CAD/CAM technology is taught in different graduation levels in Dentistry, it is considered that Portuguese and Spanish graduation level students are not able to use it without additional training. In a post-graduation level, there is a difference between students in both countries.

Keywords: education, dental, computer-aided design, prosthodontics, dental materials.

INTRODUCTION

Computer-aided design (CAD) and computer-aided manufacturing (CAM) have become an increasingly popular part of dentistry over the past 25 years.(Prajapati, Prajapati, Mody, & Choudhary, 2014) Over this years, CAD/CAM technology has enabled an improvement / optimization in oral rehabilitation, providing new production methods and more resistant materials used in the dental laboratory and in the dental office for different types of dental prosthesis.(Boitelle, Mawussi, Tapie, & Fromentin, 2014)

The technology is composed by three components: a digitalization tool/scanner to capture the form of the tooth, a computer aided design (CAD) software to process data and design the restoration, and a computer aided machining (CAM) technology that transforms the data set into the desired product.(Beuer, Schweiger, & Edelhoff, 2008)

CAD/CAM systems can be classified according to the location where the prosthetic work is manufactured. There are: chairside systems, used in the dental office; laboratory systems, used by the dental technician in the dental lab; and milling centers, that centralize the production of the prosthetic framework, after which it returns to the dental laboratory to finish the prosthetic rehabilitation. (Beuer, Schweiger, & Edelhoff, 2008) The aim of this research

was to analyse how CAD/CAM technology is included in the dental education curricula of dental schools in Portugal and Spain, particularly: course type; subjects where it is included; lectures classification (theoretical, theoretical-practical or clinical); educational level of the syllabus; clinical setting; and Faculty opinion considering Oral Rehabilitation learning.

A survey was distributed by e-mail to all Professors of Prosthodontics in Higher Education Institutions of Dental Medicine in the Iberian Peninsula. Response rate was 48% (total: 12 institutions).

RESULTS AND CONCLUSIONS

CAD/CAM technology is widely covered in the training of future Dentists in the Iberian Peninsula, although, in average, the graduation courses have less than 5 teaching hours, and the post-graduation courses more than 15 hours. Most of students in the university clinic already have access to CAD/CAM systems, within the Institution. However, in Portugal it is used only in specific situations, while in Spain it is used more routinely in a university clinical practice. As for the materials used in CAD/CAM systems, the most common in Portugal are: lithium disilicate, zirconia and metals; in Spain, although these are also the most common used materials, other materials such as alumina, leucite, feldspathic ceramics and composites are also used for the construction of indirect restorations.

Although CAD/CAM technology is taught in different graduation levels in Dentistry, it is considered that Portuguese and Spanish graduation level students are not able to use it without additional training. In a post-graduation level, there is a difference between students in both countries, being that in Spain, 67% consider that post-graduated students are able to use CAD/CAM technology without additional training.

Within the limitations of this study, it may be considered that the teaching of CAD/CAM technology must be optimized, in order to provide our students the tools to keep up with the evolution of dental technologies in the dental practice.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the organization of the 2016 Annual Meeting of Prosthodontics Professors in Iberia for having provided the e-mails list of Prosthodontics Professors in Portugal and Spain.

REFERENCES

- [1]-Beuer, F., Schweiger, J., & Edelhoff, D. (2008). Digital dentistry: an overview of recent developments for CAD/CAM generated restorations. *Br Dent J*, 204(9), 505-511. doi: 10.1038/sj.bdj.2008.350.
- [2]-Boitelle, P., Mawussi, B., Tapie, L., & Fromentin, O. (2014). A systematic review of CAD/CAM fit restoration evaluations. *J Oral Rehabil*, 41(11), 853-874. doi: 10.1111/joor.12205.
- [3]-Prajapati, A., Prajapati, A., Mody, D., & Choudhary, A. B. (2014). Dentistry Goes Digital: A Cad-Cam Way - A Review Article. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 13(8 Ver. IV), 53-59.