

Promotion of education and research in dental basic science. A call for action.

Promoción de la educación y la investigación en ciencias básicas dentales. Un llamado a la acción.

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The knowledge of basic sciences is essential to understand the pathophysiology of the oral cavity and its related diseases. Subjects such as oral anatomy, histology, embryology, biochemistry, among others, provide the fundamentals for an outstanding academic and clinical performance.¹

Even though teachers and students recognize the importance of basic science courses, as demonstrated by a recent study by Fukuhara *et al.*,¹ in a Peruvian cohort, the process of learning and the methodology of teaching are still considered a challenge for both groups.

The simultaneity of contents provided by other basic science or preclinical courses per semester, and the large amount of information in each subject increases the academic stress in dental students, which favors rote learning and a growing disconnection between the scientific basis and its application in clinical practice.^{3,4} This problem is further aggravated by deficiencies in the implementation of specialized laboratories inside dental schools, especially in less developed countries where policies for the promotion of science and technology are still immature. In addition, there is a lack of qualified dental researchers engaged in teaching in private and public universities, as tenured faculty positions are scarce.

Therefore, the teaching of basic science is still delivered to dental students in an old-fashioned way, through repetition and not through experimentation. Although there are no published reports about the scientific output in basic dental science of Latin American countries, it is believed that most of them follow the same trend. For instance, a rapid review in the Peruvian National Registry of Research Works (RENATI) showed an increase in completed thesis focused within the field of oral microbiology and biomaterials; however, other type of experimental designs, involving the use of biological techniques at a cellular or molecular level, is almost non-existent.

Similarly, a review of the scientific output of the main Dental Schools in Peru, in databases such as SCOPUS or Web of Science (WoS), showed that almost all the published work has been conducted abroad or were based on international collaborations; this demonstrates the real status of basic dental research in the country.

What can be done about this situation? It is urgent to establish an adequate diagnosis for each country, to carry out serious bibliometric studies identifying the scientific production in dental basic science. It

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is not enough to insist on the improvement of the infrastructure; it is necessary to renew the traditional way of teaching science, changing the rote learning process for an innovative approach.

In this context, dental schools should adopt new criteria for hiring faculty members with demonstrated expertise in research and not only in teaching. Ideally, an educator in dental basic science should disseminate in a practical and simple way the scientific advances and latest technology in their respective areas. It is the responsibility of basic science departments to deepen efforts to promote basic research in dental students from the undergraduate level.

Formative research projects within each subject, or extracurricular activities such as study and reading groups, journal clubs, science clubs, among other initiatives can be supervised by faculty members or teaching assistants.

It is important to act now and change the traditional, old-fashion image of core courses taught during the freshman years of undergraduate dental education. Let us try to awaken among our dental students the curiosity for scientific exploration so that they may continue the path of research and education in dental basic sciences.

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