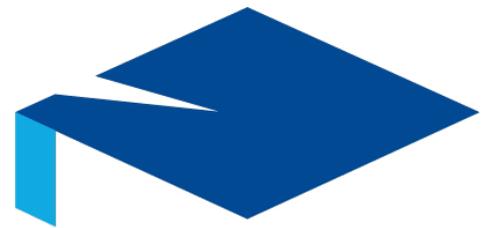




ADVANCING EDUCATION
AND ORAL HEALTH

DOMAIN V – RESEARCH DOCUMENT



graduating
european
dentist



DOMAIN V: Research

Definition

It is widely recognised (Field et al 2017), that working to an evidence-base, and being critically aware of the science that underpins treatment, is essential for delivering safe and effective patient-centred care. In order to achieve these outcomes, students must also understand the basis for, and the mechanisms that underpin dental research design, data analysis, and the communication of research data.

Description

Recognising that dentists are expected to practice to a robust evidence base, it is important that they are able to:

- Choose appropriate sources of evidence or information
- Draw accurate conclusions from information sources
- Communicate and attribute information appropriately

The undergraduate curriculum should reflect the importance of these principles.

Active involvement in research

Aspirationally, curricula might also provide students with the opportunity to learn about, or engage with, the process of carrying out a research project. Workshops carried out by the ADEE curriculum taskforce show that educators strongly believe that students should carry out some form of 'research project', even though perceived common barriers include a lack of experienced supervisors, a lack of space in the curriculum, and problems with financing projects. These barriers are echoed elsewhere (Carberry et al 2021). In contrast, identified enablers include:

- having enthusiastic and experienced staff
- allowing students to choose their own research topic
- having a clear and structured programme to guide students (and staff)
- offering explicit learning outcomes

The last point about offering explicit learning outcomes is also supported by Murray et al (2022) and Lee et al (2020) who noted in their systematic reviews of medical students' research skills and training, that there is often poor constructive alignment between intended learning outcomes, and assessment methods – especially in programmes offering solely 'project-based' methods of delivery.

It is well-understood that 'learning by doing' results in a more profound reflection, and retention of knowledge and skills – but this doesn't necessarily mean that students must complete an actual research project from start to finish. The behaviour-based learning outcomes stated below are written in such a way that educators can devise learning and assessment activities that fit either model of student engagement.

ADEE workshops have also shown that the teaching methods educators would recommend for facilitating student research activity include collaborative projects, critical appraisal of papers or sources (such as involvement with a journal club) and gamification of research. Methods of suggested formative and summative assessment include oral presentations, communicating information to patients, and tutoring to more junior students.

Choosing and managing sources of information

In an era of information overload and social media, it is becoming increasingly evident that our students need help in developing skills for choosing information sources appropriately. It is also reported by many educators that information literacy skills appear to be waning, including skills for communicating and managing information – as well as attributing sources correctly. As artificial intelligence plays an increasing role in student learning, it is increasingly important that students are able to demonstrate academic integrity – and correctly acknowledge sources of ideas and information that they use within their work. These elements are explicitly included within this new curriculum domain.

MAJOR COMPETENCE: 5.1: Research Design

Learning outcomes

A graduating dentist must be able to:

- 5.1.1 Formulate relevant research questions/hypotheses
- 5.1.2 Identify appropriate databases/sources of information
- 5.1.3 Formulate an effective and logical strategy for finding information
- 5.1.4 Explain the value of peer-review in quality assuring research
- 5.1.5 Appraise the various types of study design
- 5.1.6 Propose an appropriate study design to answer a particular research question
- 5.1.7 Explain the concept of a hierarchy of evidence
- 5.1.8 Explain the need for ethical review prior to carrying out research
- 5.1.9 Describe the main ethical considerations when planning research

MAJOR COMPETENCE: 5.2: Data Analysis and Interpretation

Learning outcomes:

A graduating dentist must be able to:

- 5.2.1 Explain the concept of critical appraisal
- 5.2.2 Critically appraise published research
- 5.2.3 Formulate appropriate conclusions from, and understand the limitations of, research data
- 5.2.4 Explain how conclusions from research might impact on clinical practice or patient care

MAJOR COMPETENCE: 5.3: Information Literacy

Learning Outcomes

A graduating dentist must be able to:

- 5.3.1 Effectively summarise and present findings from original research or published papers
- 5.3.2 Correctly acknowledge sources of information or ideas

Recommended sources of information:

Field, JC, Kavadella, A, Szep, S, Davies, JR, DeLap, E, Manzanares Cespedes, MC. The Graduating European Dentist—Domain III: Patient-Centred Care. Eur J Dent Educ. 2017; 21(Suppl. 1): 18-24. <https://doi.org/10.1111/eje.12310>

Lee (2020) – Determining Expected Research Skills of Medical Students on Graduation: a Systematic Review

Leary (2021) – Teaching research methods to undergraduate dental students. Journal of University Teaching and Learning Practice. 18 (2)

Carberry (2021) – Curriculum initiatives to enhance research skills acquisition by medical students: a scoping review. BMC Medical Education 21(312)

Lee (2021) – Teaching medical research to medical students: a systematic review. Medical Science Educator. 31

Murray (2022) – Scoping review: research training during medical school. Medical Science Educator. 32