Implementation Strategies of Evidence-Based Caries Management Approach in Dental Education: a scoping review

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Introduction

- Slow integration of Evidence-Based Caries Management (EBCM) approach into dental education and practice (1)
- Significant gap between evidence-based guidelines and how dentists operate in clinical practice(2)
- Dental schools continue preparing dental students for surgical caries management (3,4)
- To enhance the adoption, implementation, and sustainability of this approach in dental education, more effective strategies are needed

Aim:
To map and summarize the evidence on implementation strategies of EBCM in dental education and identify knowledge gaps.

Methods

- Joanna Briggs Institute recommendations and the Arksey and O'Malley framework
- PCC framework for inclusion/exclusion criteria
- Search strategy developed by an expert librarian
- Medline, Scopus, Embase and Eric databases, grey literature and hand search
- Since 1990, no language limits, all study designs
- Two independent reviewers: titles and abstracts screening, full text reviewing and data extraction
- Proctor et al. 2013 frameworks for categorization of the implementation strategies
- Expert Recommendations for Implementing Change (ERIC) for matching the used strategies with the recommended list (5)

Results

- 1476 relevant articles
- 47 relevant studies for full text review and 23 studies for final inclusion
- Grey literature: ADEA webinar on EBCM implementation experience in four US dental schools
- Location of studies: Dental schools in US&Canada (14), South America (7), European region (5) and Asia (1)
- Year of publication: 2007 – 2022
- Proctor model:
  - *Actors*: cariology educators and lecturers, faculty members, ICDAS experts
  - *Actions*: workshops, didactic trainings, lectures, e-learning, inverted classrooms, teledentistry, digital learning tools,etc..
  - *Target:* dental students, instructors, dental hygiene students
  - *Implementation outcomes:* Improvements in students' performances, learning engagement, satisfaction of the learning, correct determining risk level, reproducibility and timely approach, their readiness to adopt the new approaches, consensus on core cariology curriculum etc..

Tables and figures

Fig 1.Prisma diagram

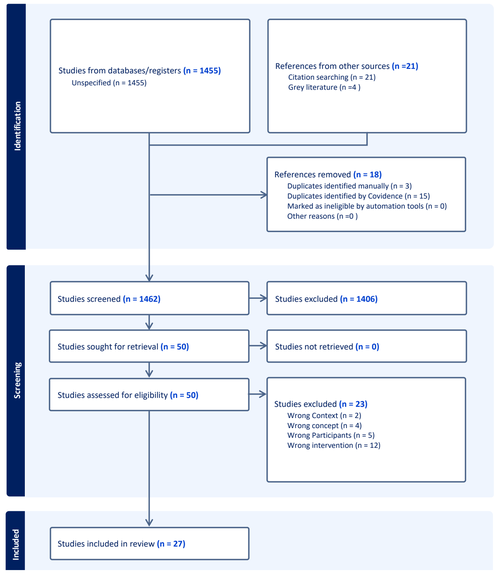

Table 1. Summary table of main results

	Studies (n)	Implementation description	ERIC list match
Core Cariology Curriculum	6	- Workshops - Symposium	-Conduct educational meetings -Conduct local consensus discussions
Whole approach	7	-Inverted classrooms -Additional training -In-house and workshop trainings for faculty members -Additional hands-on trainings -Active learning -Change to electric forms -Audience response rate	-Make training dynamic -Conduct ongoing trainings -Inform local opinions
Caries detection	7	-E-learning and digital learning tool -Classroom activities and lectures -Simulated lab trainings -Providing feedback	-Make training dynamic -Conduct ongoing trainings -Provide ongoing consultation
Caries risk assessment	5	-PowerPoint presentation -Faculty calibration -Handing guidelines -Discussions -Teledentistry	-Make training dynamic -Conduct ongoing trainings -Inform local opinions -Distribute educational materials
Caries detection & Caries Risk Assessment	2	-Using caries risk colored forms and electronic health records -A course for hygiene students on ICDAS diagnosis -Caries detection classes in deferent department -Case discussionsand simulations	-Make training dynamic -Conduct ongoing trainings

Discussion

- The first scoping review on this matter
- Highlighting the strategies and outcomes of incorporating the EBCM approach in dental education
- Students' understanding, abilities, and commitment to evidence-based practices in cariology can improve through the incorporation of continuous and dynamic training such as E-learning, simulation labs, new teaching techniques and etc..
- Only 7 evidence sources implemented whole approach
- Lack of patient-related outcomes

Conclusions

The results of this scoping review highlight the significance of customized implementation strategies in EBCM approach to enhance dental education outcomes, specifically in the field of cariology.

Knowledge Translation / Future Directions

The evidence summarizing the implementation strategies will be translated to cariology educators and dental school curriculum planners by peer reviewed journals' publications; thesis publication and conference presentations resulting in improving the implementation of EBCM approach in dental education and later on in dental clinical practice

Acknowledgements

Funding: Faculty of Dental Medicine and Oral Health Sciences, Dentathon project
Special thanks to Martin Morris, librarian and Joon Kwon, DMD student.

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