Preparing Students to Practice Evidence-Based Dentistry

A Mixed Methods Conceptual Framework for Curriculum Enhancement

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Dean, UAB School of Dentistry
Preparing Students to Practice Evidence-Based Dentistry

- Evolution of Evidence-Based Dentistry
- UAB Curriculum Reform
- New Paradigms
The Future of Oral Health Education

What makes a good dentist and how do you teach that?

- Caring
- Compassionate
- Ethical
- Great clinical skills
- Stay current with knowledge
Evidence-Based Dentistry (EBD)

Evolution of EBD
- Began in 1990’s
- Stimulated by concerns about access to oral health care
- Interdisciplinary learning and problem-based approach

EBD Purpose
- Supports clinical decisions
- Minimizes misdiagnosis
- Ensures best decision making

Dental students benefit by applying research knowledge to practice
Scientific Knowledge Enhances Clinical Skills

EBD Implementation
- Enhances research focus
- Applies results of research to clinical training & practice
- Creates life-long learners
“curriculum is no longer the sole responsibility of the singular academic in a university...”

-Walkington
UAB Curriculum Reform

Goals
- Enhance research
- Apply results of research
- Principles of EBD served as impetus for change

NIDCR support
- Incorporate scientific perspective
- Engage oral health researchers in redesign
- Provide students with opportunity to participate in research
Framework for Incorporating EBD

Phase I: Exploring the Phenomenon

Review of Literature
- Identify paradigms and categories

Focus Groups
- UAB faculty, students, alumni
- Perspectives on benefits, barriers, and influence of the educational process

Themes Developed
- 4 themes
  - Benefits of EBD in the curriculum
  - Barriers to EBD in the curriculum
  - Influences of clinical practice
  - Processes to incorporate EBD
- 19 sub-themes
Phase II: Development of Instruments

Survey Design

- Survey items were developed from qualitative themes, subthemes, and participant quotes
- Fifty-one survey items based on themes
- Demographic items (four for students, five for faculty) and six items for rating the extent to which the content of selected basic science and dental courses incorporated EBD principles

Internal Reviews

- Improve content validity
- PI and selected core dental faculty members provided suggestions to revise the survey length and eliminate ambiguity in item wording
Phase III: Data Collection, Analysis, Outcomes and Evaluation

Data Collection

- Surveys administered to dental students and their faculty members during one month of a spring term

Data Analysis

- Exploratory factor analysis, descriptive statistics (item means and standard deviations), and Cronbach’s alpha values to estimate internal consistency reliability

Results

<table>
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<tr>
<th>Table 4. Descriptive statistics for EBD survey factors</th>
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<tbody>
<tr>
<td>Factor</td>
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<tr>
<td>Factor I. EBD benefits</td>
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<td>Factor II. EBD translation into the clinical environment and enhancements to the curriculum</td>
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<td>Factor III. EBD barriers</td>
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Phase IV: Application to Curriculum Reform

- Development of Scholars' Clubs
- Curriculum Revision
  - Continuum between biomedical and clinical sciences starting in D1 year
  - Early entry into clinic
- Additional opportunities for research
The mind is not a vessel to be filled, but a fire to be kindled

-Plutarch
New UAB Curriculum Model

Some issues are so important they must be delineated across the curriculum through a High Stakes Assessment (HSA)

• Four “themes” of excellence permeate HSA:
  - Community Service
  - Ethics & Professionalism
  - Clinical Dentistry
  - Scholarship

• Students undertake yearly tasks, components throughout the four-year curriculum
D1 Curriculum

Key EBD Courses
• Evidence-Based Dentistry
• High Stakes Assessments (both terms)
• Case-Based Education 1

EXAMPLE: Evidence-Based Dentistry Course

Individual Projects
• Compare the failure rate of crowns on natural teeth versus on implants. What factors are in play?
• Is there an association or causative relationship between periodontal disease and life stressors?

Group Projects
• Compare longevity of milled ceramic crowns versus traditional porcelain-fused-to-metal crowns. Include factors such as marginal fit, fracture resistance, recurrent caries, and patient satisfaction.
• Describe and compare means of treating xerostomia in elderly patients taking multiple medications. What drugs might stimulate salivary function as a side effect? What side effects might be complications for drugs specific for increasing salivary flow?
D2 Curriculum

Key EBD Courses
• High Stakes Assessments (both terms)
• Case-Based Education 2 & 3

Case-Based Sample Group Exercise

Group Session Instructions:
- As a group, please identify five case-specific topics that could be explored about this case. Type the list in MS Word and submit via Canvas by 9:00 pm, Wednesday, August 15th. Each group facilitator will select a topic for your group’s Unique Aspect Paper.
- During your group session, identify what information you will need to fully diagnose this case.
  You will need further information pertaining to Mrs. Summers’ dental, social, and medical histories. During class on Thursday, you will have the opportunity to ask Mrs. Summers (aka Dr. Mitchell) for her dental and social history. Additional medical history information will be gathered from your facilitator at the first facilitated session. Photos are available on Canvas.
- Research the patient’s medications and be prepared to discuss the correlation between her meds and oral pathology lesion. Also, be prepared to discuss the oral pathology differential diagnoses.
Scholar’s Symposium

- 22 presentations in 2005
- 64 student presentations in 2014 (DMD and Residents)
- Over $1M federal support for student research activities
D3 & D4 Curriculum

High Stakes Assessment culminates in the presentation of a “Capstone Case” to classmates and a faculty board of examiners (D4)

Capstone Case documents comprehensive care of a patient

- Vital signs
- Chief complaint
- Social history
- Medical history
- Dental history
- Pre-operative photography
- Pre-operative radiographs
- Articulated diagnostic casts (pre-operative)

- Treatment plan
- Intraoral photograph of at least one tooth preparation
- Photographs of working casts for fixed or removable prostheses
- Post-operative final photographs
- Evidence base for treatment
Capstone Case

Patient
- Vitals: 117/68
- CC: “My bridge is loose.”
- Social History: Non-contributory to dental treatment
- Medical History:
  - DM II (BS – 110 mg/dl)
- Dental History:
  - Significant prosthodontics/endodontics

Delivery

[Images of dental procedures and X-ray]

UAB DENTISTRY
Capstone Case EBD


- Published this year*
- Systematic Review of 42 articles from PubMed, Cochrane Database, and Science Direct. Larsson C. and Wennerberg A
- The results suggest that the success rate of tooth-supported and implant-supported zirconia-based crowns is adequate, similar, and comparable to that of conventional porcelain-fused-to-metal crowns
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New Paradigms for EBD

- How many practitioners use Google as their primary source for clinical information?
- How do we teach students to evaluate Internet sources of evidence?
- How do we teach students to ask clinically meaningful questions and conduct research?
DPBRN  Dental Practice-Based Research Network

Engages practitioners at every step of the research process

- Data collection
- Data analysis
- Manuscript preparation
- Presentations
  - local
  - regional
  - rational
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Thank You

Michael S. Reddy, DMD, DMSc, Dean
UAB School of Dentistry