R2R : Research in Medical Education

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CQI: Continuous Quality Improvement

- Quality
- Efficiency
- Economy
- Safety
Process Improvement

• Plan: problem / cause identification quantitative, qualitative analysis of problem, choices / alternative methods
• Do as pilot implementation
• Study as evaluation / assessment of the pilot
• Act as the routine
Medical Education

• Development of clinicians and clinical/health team across continuing professional development
• Education for all health care providers

http://www.nihr.ac.uk/funding/medical-education-research.html
Medical Education: Why It is Important (1)

• Increasing focus on evidence, accountability, and quality in healthcare
• From opinion-based to evidence-based education
• Need of standard evaluation and assessment
• Educational curricula and teaching based on research findings rather than historical and culturally engrained traditions
• Multidiscipline to enrich medical education
Medical Education: Why It is Important (2)

• Real differences in educational strategies not be reflected in outcomes
• Many components / variables with variable quality
• Longer period of the time between learning and important outcome/performance

Geoff Norman; Research in medical education: 3 decades of progress BMJ, Vol 324, Jun 2002
PICO Model

- People
- Intervention
- Control / comparison
- Outcome
Recommended Research Structure

• Clear question
• Subject recruitment
• Data analysis
• Reporting
• Dissemination of results
• Participatory action planning
• Piloting
• Routine implementation
Complex Ecosystem in Medical Education

- classes, institutions, regions, and even countries
- curriculum design
- instructional format
- learning delivery models
- program and performance evaluation
- faculty selection / development / efficacy
- learning environment and culture
Top Themes in Medical Education Research (20-year review) 1

- Student assessment & evaluation
- Clinical skills training
- Clinical clerkships
- Problem-based learning
- Community-based training
- Clinical competence assessment
- Teaching the clinical sciences

Anu Atluru et.al., *Research in Medical Education* A Primer for Medical Students, Association of American Medical Colleges, April 2015
Top Themes in Medical Education Research (20-year review)

- Communication skills training
- Student characteristics
- Objective structured clinical exam (OSCE)
- Teaching the basic sciences
- Nature of clinical reasoning
- Professionalism in medicine (incl. attitudes, cultural competence, ethics)

Anu Atluru et.al., *Research in Medical Education: A Primer for Medical Students*, Association of American Medical Colleges, April 2015
Top Themes in Medical Education Research (20-year review) 3

- Costs of medical education
- Faculty development
- Use of simulations
- Admission to medical school
- Medical licensing exams
- Knowledge retention
- Specialty choice
Top Themes in Medical Education Research (20-year review) 4

• Scholarship in education
• Humanities in medicine
• Teaching through lectures
• Inter-professional education
• Computer-assisted instruction
• Underrepresented minority students
• Patient outcome / safety / perspectives
Developing Relevant Research Question

• Clinical / teaching issues / observation: ‘How does sleep deprivation affect medical students .......... ?’

• Literature review of a particular topic for gap of knowledge / further research ‘Can learning style predict with different instruction methods and academic achievement in medical education?’
Kirkpatrick Framework: Impact Levels of an Educational Intervention

- **Level 1** - reaction
- **Level 2** - learning (attitude / skills / knowledge in either a clinical or a non-clinical setting e.g., simulated environment)
- **Level 3** - behaviour (behavioral change of healthcare providers in the clinical setting)
- **Level 4** – results (professional practice / improved patient outcome)

Need for Further Advancement

- Most researches reporting outcomes related to participants rather than on assessment of patient care outcomes
- Majority of studies use quantitative methods
- Use of qualitative methods can provide insight into the nuances and complexities of the learning and teaching processes in medical education
3-P Model: Presage-Process-Product

- **Presage**: 
  - **Student context**; motivation, values and expectations
  - **Teacher contexts**; class or institutional teaching environment, structure and content of the course and curriculum, teaching methods and evaluations

3-P Model: Presage-Process-Product (2)

- **Process:**
  - **Surface process,** students reproduce the learning only to pass the assessment
  - **Deep process,** use multiple techniques (discussion, reading, and reflection) to create connections between pieces of information learned

3-P Model: Presage-Process-Product (3)

- **Product**: learning outcomes

3-P model can help to consider presage issues, how they affect process issues (e.g., learner interactions), and how these in turn can impact on product

Cook Classification

• **Description**: an innovation, such as a new assessment tool or curriculum, where there is no available comparison

• **Justification**: compare the effectiveness of educational interventions.

  ‘*Which intervention is better?*’

• **Clarification**:

  ‘*How does it work?*’ and ‘*Why does it work?*’

Quantitative Approaches

- Survey
- Pre and post studies
- Longitudinal studies
Qualitative Approaches

- Case study
- Participatory action research
- Rapid assessment process