

Building Capacity for Education Research Scholarship Among Clinical Educators in the Health Professions: A Best Evidence Medical Education Systematic Review of the Impact of Interventions

Rabia Ahmed(MD)¹, Ameer Farooq (BSc)², Dale
Storie(MLIS)³, Lisa Hartling(PhD)⁴, Anna Oswald (MD)¹

¹Department of Medicine, University of Alberta, Edmonton, Canada

²Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Canada

³Faculty of Medicine and Dentistry and School of Public Health, University of Alberta, Edmonton,
Canada

⁴Department of Pediatrics, University of Alberta, Edmonton, Canada





Background

- There is a growing desire for health professions educators to generate high quality education research scholarship
- In response, institutions are increasingly devoting resources to train its members with education research skills using various interventions
- Impact of these interventions has not been systematically studied, though such a synthesis could provide useful guidelines for practice



Purpose

- We prospectively registered and conducted a systematic review of the literature to assess the impact of interventions meant to build capacity for education research scholarship.
- The aim of this study is to:
 1. Identify interventions aimed at building capacity for education research scholarship among health professions.
 2. Examine and synthesize the evidence behind these interventions
- May guide & inform Faculty Development, resource allocation & future program development

Definitions

Education Research Scholarship

- Boyer (1990)
- 4 types scholarship:
 - teaching
 - integration
 - application
 - discovery
- For the purposes of this review, education research scholarship refers to the scholarship of discovery in health professionals

Clinical Educator

- *Academic*: impetus & resources to conduct research
- *Clinician*:
 - significant clinical rather than research training
 - competing professional responsibilities
- *Educator*: immersed in context & setting to which education research scholarship is applied

Research Capacity Building (RCB)

- “A process of individual and institutional development which leads to higher levels of skill and greater ability to perform useful research” (Trostle 1992).
- Faculty Development is important aspect of RCB but RCB expands to other processes & groups.



Summary of Key Inclusion Criteria:

Population	Healthcare professional clinical educators (Physicians, Nurses, Pharmacists, Dentists, Veterinarians, Dieticians, Clinical Psychologists, Other Allied Health Professionals)
Intervention	Fellowships/Masters, Bursaries, Teaching Scholars Programs, Offices of educational research, Initiative to build or expand research networks, Research facilitators/Mentorship, Peer writing groups, Small grants, Research forums, Formal instruction, etc.
Outcome	<ul style="list-style-type: none">•Change in patient outcomes (Kirkpatrick 4)•Changes in Products of Scholarship (Kirkpatrick 3)•Change in behavior around Scholarship (Kirkpatrick 3)•Change in measured or perceived knowledge or skills (e.g. knowledge acquisition scores, self ratings of skills) (Kirkpatrick 2)•Learner reaction/satisfaction (Kirkpatrick 1)
Study Design	Studies which provide primary data for any of the outcomes listed above
Language	English (Morrison A et al., 2009)

Methods

Assessment of methodological quality:

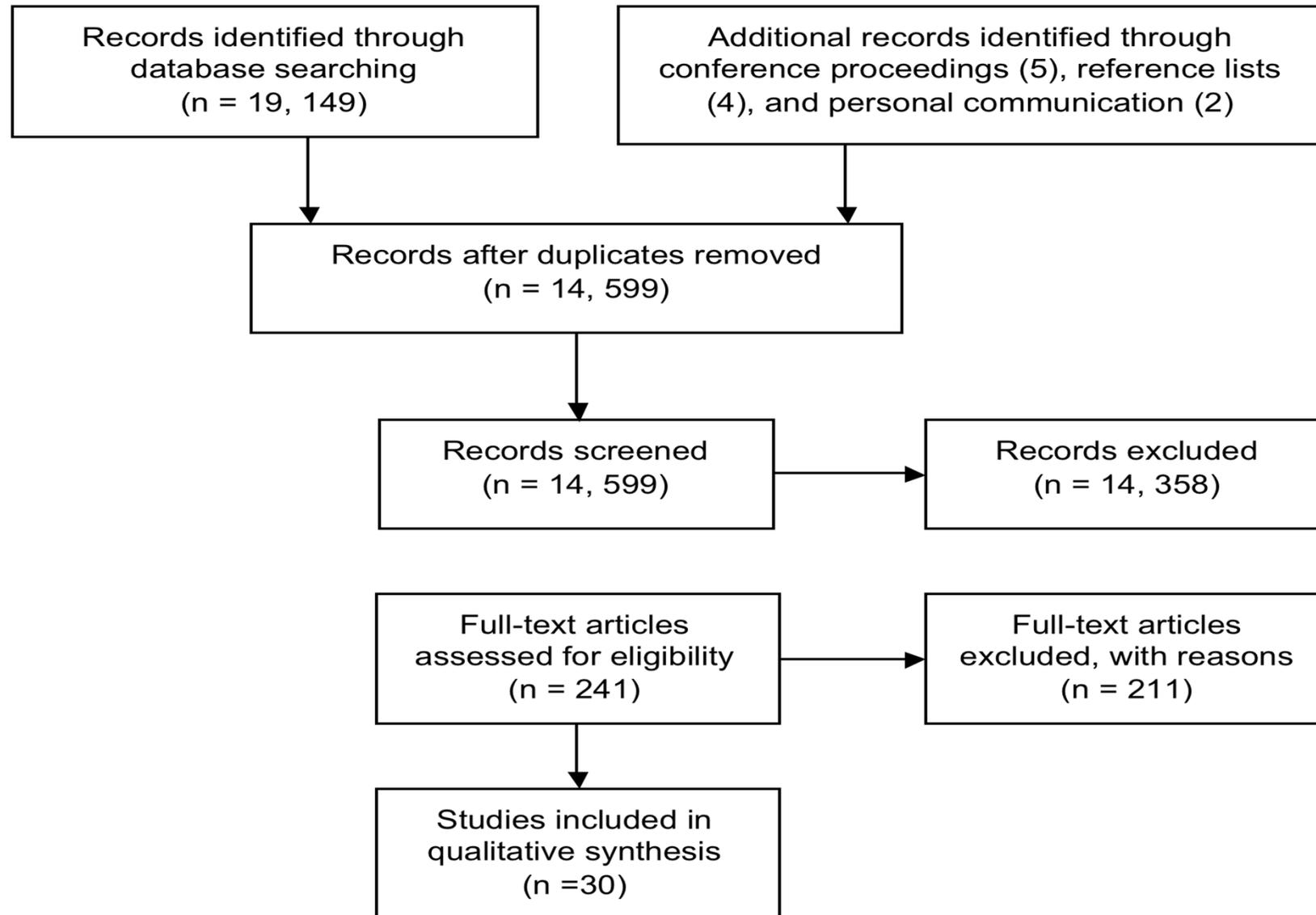
- Medical Education Research Study Quality Instrument (MERSQI)

Data Analysis:

- Mixture of qualitative & quantitative studies expected
- Qualitative synthesis according to Ogawa & Malen (1991)
 - based on exploratory case study method
 - Synthesized by grouping studies by intervention type
- Tables detailing study characteristics (including population, outcomes and design), quality assurance, results and authors' conclusions were constructed
- Meta-analysis only if adequate homogeneity of design, interventions & outcomes



Figure 1: Flowchart of Systematic Review Process



Results: Summary of intervention types

Intervention Type	Number of studies
Medical Education Fellowship or Masters	7
Teaching Scholars Program	10
Medical Education Writing Group	2
Medical Education Scholarship Award or Grants	4
Faculty Development Medical Education Scholarship Initiative	3
Offices in Medical Education Research/Academy of Medical Educators/Medical Education Research Group	3
Mixed Intervention	1
TOTAL	30

Results

Population

- Participant groups extremely varied
- 8 studies only physicians and 1 study only nurses
- Rest mixed groups including:
 - Basic Scientists (10 studies)
 - Nurses (5)
 - Administrators (3)
 - Pharmacists (2)
 - Dentists (2)
 - Social workers (1)
 - Veterinarians (1)

Study Design

- 22 Quantitative
- 4 Qualitative
- 3 Mixed Method
- 6 pre-post test
- 21 post-test
- 2 both
- 1 comparative
- 5 self-reported changes
- 10 survey
- 8 CV analysis
- 4 interviews
- 1 Social network analysis
- 3 Combination

Methodologic Quality (MERSQI Score)

- Predominantly weak designs
- Mean MERSQI score 8.87/18 (range 5.5 - 14)
- 26/30 studies descriptive analysis only

Outcomes (K-level)

- Kirkpatrick levels reported:
 - level 3 (n=22)
 - level 1 (n=15)
 - level 2 (n=4)
- No studies reported Kirkpatrick level 4 outcomes
- Most commonly reported Kirkpatrick level 3 outcomes were # of grants, publications & presentations

Results: Focused Analysis

- Heterogeneity of designs & outcomes precluded statistical meta-analysis
- Thus, performed more detailed qualitative synthesis of interventions with **higher quality designs**
 - i.e. pre-post design or comparison group (vs. post-test only design)
- 9 studies met this criteria and evaluated:
 - Masters/fellowships (2)
 - Teaching Scholar Programs (3)
 - Writing group (1)
 - Faculty Development initiative (1)
 - Medical education research office/academy (1)
 - Grant program (1) (*the only comparative study in our review*)
- Reported data in these studies did not allow for calculation of effect sizes



Results: Focused Analysis

Protected time to complete educational research scholarship (5/9 studies).

Mentorship and/or collaboration in educational research scholarship (6/9 studies).

Focused Analysis Themes:

Departmental and/or institutional leadership & commitment (3/9 studies).

Financial support (3/9 studies).



Discussion

- Although many studies of weak design, this body of literature does suggest positive changes in:
 - (A) Learner satisfaction (15 studies)
 - (B) Knowledge & skills required to conduct educational research scholarship (4 studies)
 - (C) Behaviors such publications & grants (22 studies)
- Although behavioral change is most commonly reported outcome, nearly all these studies were descriptive & thus causation unclear
- Due to the heterogeneity of methodologies & paucity of comparative studies, it is not possible to determine which intervention type had the *most* beneficial effect



Discussion

STRENGTHS

- Prospectively registered
- Rigorous systematic review methodology
- Clear definitions:
 - Education research scholarship
 - Clinical educator
 - Research Capacity Building
- Vast breadth of literature evaluated

LIMITATIONS

- Low/moderate quality study designs:
 - Descriptive studies that lacked external quantitative comparators or rigorous qualitative methods.
 - Limited use of mixed method or qualitative study design
 - Lack of validated outcome measures (e.g. surveys)
- Lack of detailed descriptions of interventions prevents replication
- Arbitrary classification of studies into “intervention type”
- Publication bias?



Discussion

- This review indicates a considerable body of literature in this area
- A number of studies address newer concepts of “supportive work environment” through measuring collaborative or social networks
- Marked efforts to increase recognition & rewards for medical education research scholarship within medical community
 - E.g. via awards, promotion & leadership positions
- This shift in philosophy is further demonstrated in the 2013 CAME position paper on Education Scholarship & its interplay with promotions guidelines & practices in Canada

Conclusions

- While this area of literature is gaining momentum, the strength of evidence in this area remains limited by weaker study designs
- However, most interventions described a positive impact in terms of learner satisfaction and behavior
- Breadth of interventions & outcomes impressive
- Must continue to work together to evaluate RCB initiatives & draw from the broader literature regarding RCB to develop higher quality evaluation techniques across local and regional research networks



Acknowledgements

- University of Alberta Teaching Scholars Program
 - Support for Dr. Rabia Ahmed and student Ameer Farooq
- Dr. Liam Rourke
 - Support with protocol development and RCB conceptual framework
- The Arthritis Society
 - Support for Dr. Anna Oswald