The Educational Effectiveness of Telementoring for Continuing Professional Development in Practicing Surgeons: A Systematic Review

Rosephine Del Fernandes,[1] Arashk Ghasroddashti,[1] Fatimah Sorefan-Mangou,[1] Boris Zevin.[2]
[1]The School of Medicine, Queen's University, Kingston, Ontario, Canada. [2]The Department of Surgery, Queen's University, Kingston, Ontario, Canada.

Introduction

Expert surgeons can coach less experienced surgeons in a remote location using video-conferencing communication referred to as telementoring.

The educational effectiveness of telementoring as a continuing professional development (CPD) intervention is not known.

Objective

Systematic review to assess the educational effectiveness of telementoring for practicing surgeons.

Methods

- Two independent reviewers screened and assessed studies for relevance, inclusion, and quality of evidence. A third reviewer resolved conflicts.
- **Electronic databases**: Ovid MEDLINE and EMBASE, review of references.
- **Date**: 1946 (conception) to August 2022.
- **Critical Appraisal**: Medical Education Research Study Quality Instrument (MERSQI).

Conclusions: **Telementoring**, as an educational **CPD intervention** for surgeons in practice, is delivered across surgical specialties locally, nationally, and internationally.

Moderate evidence demonstrates its effectiveness for **improving** surgeons' **knowledge** and **competence** in both educational and workplace-based settings. Its use can also result in changes in **patient outcomes**.

Online Poster & References.
Questions:
fernandes.r@queensu.ca

Tables and Figures

Inclusion Criteria	Exclusion Criteria
Studies using a remote telementoring intervention.	Any interventions involving in-person or a hybrid component.
Practicing surgeon population.	Surgical trainees (residents, medical students only).
Evaluates educational effectiveness (Moore's Framework of 2+).	Studies only evaluating participation (Level 1) or technological outcomes.

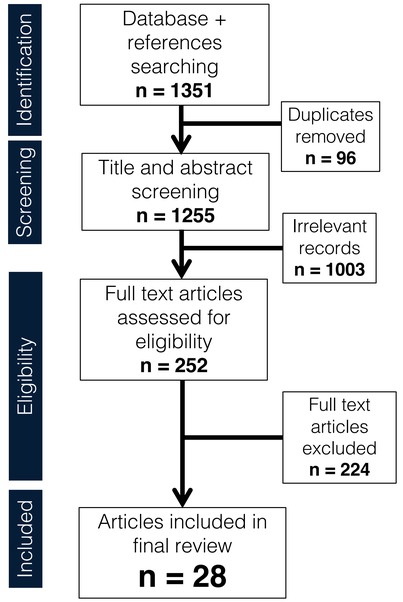
F1. Outcomes organized according to Moore's Framework.



MERSQI Domain	Response Options and Scores *Options most frequently scored are bolded*
Study Design	• **Single-group cross-sectional or single-group posttest only: 1** • Single-group pretest and posttest: 1.5 • Nonrandomized, 2 group: 2 • Randomized controlled trial: 3
Sampling: Institutions	• **1 institution: 0.5** • 2 institutions: 1 • 3 or more institutions: 1.5
Sampling: Response Rate	• Not applicable • < 50% or not reported: 0.5 • 50% - 74%: 1 • **>= 75%: 1.5**
Type of Data	• Assessment by study participant: 1 • **Objective: 3**
Validity Evidence for Evaluation Instrument Scores	• **Not applicable** • Content: 1 • Internal Structure: 1 • Relationships to other variables: 1
Data Analysis: Sophistication	• **Descriptive analysis only: 1** • Beyond descriptive analysis: 2
Data Analysis: Appropriate	• **Data analysis appropriate for study design and type of data: 1**
Outcome	• Satisfcation, attitudes, perceptions, opinions, general facts: 1 • Knowledge, skills: 1 • Behaviours: 2 • **Patient/Health care outcomes: 3**

Study	n Cases	Study Design	Specialty	MERSQI	Moore's Levels
Bove et al., 2003	17	Non-randomized 2 group	Urology	7	↑5
Bruns et al., 2016	2	Single group intervention	Pediatric Surgery	8	↑2, 3B, 5
Bruschi et al., 2005	8	Single group intervention	Urology	10	↑5
Challacombe et al., 2005	4	Non-randomized 2 group	Urology	12	↑5
Cubano et al., 1999	5	Single group cross-sectional	General Surgery	9	↑5
Deaton et al., 1999	18	Non-randomized 2 group	Vascular Surgery	12	↑2, 5
Din et al., 2022	3	Single group intervention	Ophthalmology	7.5	↑2 4,
Docimo et al., 1997	27	Non-randomizedd 2 group	Urology	11	↑5
Falcioni et al., 2022	N/A	Single group pre- and post-test	Pediatric Surgery, Laparoscopic simulation	15	↑2, 4
Fuertes-Guiro et al., 2016	36	RCT	Bariatric Surgery	13.5	↑5
Greenberg et al., 2021	N/A	Single group intervention	General Surgery, animal models	8.5	↑2
Hinata et al., 2014	120	Non-randomized 2 group	Urology	12	↑5, 6
Kavoussi et al., 1994	6	Single group intervention	Urology	9.5	↑4, 5
Lee et al., 1998	2	Single group intervention	Urology	8.5	↑5

Study	n Cases	Study Design	Specialty	MERSQI	Moore's Levels
Marttos et al., 2012	50	Single group intervention	Trauma Surgery	13.5	↑2
Mendez et al., 2005	6	Single group intervention	Neurosurgery	8	↑2, 5
Micali et al., 2000	5	Single group intervention	Urology	8	↑5
Moore et al., 1996	23	Non-randomized 2 group	Urology	12.5	↑5
Nguyen et al., 2018	30-45	Single group intervention	Bariatric Surgery	9	↑2, 4, 5
Nieto-Calvache et al., 2022	6	Single group intervention	Obstetrics & Gynecology	9	↑2, 3B, 5
Okrainec et al., 2010	N/A	Non-randomized 2 group	Laparoscopic simulation	14.5	↑4
Påhlsson et al., 2013	26	Single group intervention	Endoscopy	8	↑5
Ponsky et al., 2014	6	Single group intervention	Pediatric and General Surgery	10	↑2, 5
Pradeep et al., 2006	1	Single group intervention	Endocrine Surgeons	8	↑5
Rodrigues Netto N Jr et al., 2003	2	Single group intervention	Urology	10	↑5
Rothenberg et al., 2009	3	Single group intervention	Pediatric Surgery	10	↑5
Sebajang et al., 2005	19	Single group intervention	General Surgery	10.5	↑2, 5
Sebajang et al., 2006	18	Non-randomized 2 group	Colorectal Surgery	11.5	↑2, 5



F2. Flow diagram for included articles.