BMJ Open The epidemiology of competence: protocol for a scoping review

Susan Glover Takahashi,¹ Jodi Herold,¹ Marla Nayer,¹ Sheena Bance^{1,2}

To cite: Glover Takahashi S, Herold J, Nayer M, *et al*. The epidemiology of competence: protocol for a scoping review. *BMJ Open* 2014;**4**:e006129. doi:10.1136/bmjopen-2014-006129

► Prepublication history for this paper is available online. To view these files please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2014-006129>).

Received 13 August 2014
Revised 5 December 2014
Accepted 8 December 2014

CrossMark

¹Faculty of Medicine, Education and Research Unit, Post Graduate Medical Education, University of Toronto, Toronto, Ontario, Canada

²Ontario Institute for Studies in Education (OISE), University of Toronto, Toronto, Ontario, Canada

Correspondence to

Dr Susan Glover Takahashi; pgmecoordinator@utoronto.ca

ABSTRACT

Introduction: Factors that are important to the competence of healthcare providers have important consequences for quality of healthcare. Although some previous research has discussed risks or supports to the competence of clinicians, a thorough exploration is currently lacking. The purpose of this review is to examine the literature examining risks and supports to clinical competence of healthcare practitioners and trainees engaged in field-based education. In this study, field-based education refers to teaching or training in a real-world/work-based setting.

Methods and analysis: We will employ an established scoping review methodology. Eligible studies will include those that mention (1) a healthcare professional, (2) competence from field-based education throughout the lifespan/career and (3) a risk or support to competence. Four authors will independently apply the inclusion criteria to all studies, regardless of study design. Our data extraction will include information on study design, location and type of study and we will develop a comprehensive list of risks and supports that are discussed in the literature.

Ethics and dissemination: Since this is a review of the literature, ethics approval is not indicated. We will disseminate the findings from this study in publications in peer-reviewed journals as well as presentations at relevant national and international conferences.

INTRODUCTION

Understanding the elements of competence in healthcare practitioners has been widely explored.^{1–3} Additionally, medical education research and regulatory organisations have worked independently and collaboratively to explore factors and features associated with dyscompetence,⁴ incompetence⁵ and continuing competence⁶ in healthcare practitioners. However, a thorough exploration of factors that support or negatively affect clinician competence has yet to be described. This paper outlines a scoping review that methodically examines the literature on the risks and supports to clinical competence, primarily focusing on (but not limited to) physicians, pharmacists, physical therapists and occupational therapists, through the

Strengths and limitations of this study

- A strength of this study is the systematic approach and use of an established methodology for conducting scoping reviews.
- To enhance the fidelity of our review, we will conduct calibration exercises at each step, prior to proceeding to independent screening or extraction.
- A limitation of this review is the possibility of missing potentially relevant articles.

training and practice lifecycle from field-based education (eg, clinical fieldwork, work-based learning, clerkships and placements) through practice to retirement. The primary objectives of this review are to explore the existing literature on clinician competence and develop a thorough inventory of identified risks and supports to competence. Further, we will examine these risks and supports in further depth, in order to provide recommendations for practice.

METHODS

To examine the literature pertaining to the risks and supports to competence, a scoping methodology will be utilised. Scoping reviews aim to achieve a broad and thorough examination of the literature in a given area, rather than an in-depth investigation.⁷ Scoping studies are used to examine the extent, range and nature of research activity,⁷ and may help in understanding what is already known in the existing literature.⁸ We will follow the steps for conducting a scoping review, outlined by Arksey and O'Malley⁷ as: (1) identifying the research question, (2) identifying relevant studies (developing the search), (3) study selection, (4) charting the data (data extraction) and (5) collating, summarising and reporting the results.

The research team developed an initial protocol that outlined the approach and decision within each step. The protocol was circulated to all team members, and will be revised as needed throughout the review process.

Search strategy

The primary search strategy (MEDLINE) was developed collaboratively by the four authors and reviewed by an academic librarian. The search terms include the following healthcare practitioners: physicians, physical therapists, occupational therapists and pharmacists, at all levels of postclassroom education. It was decided that terms referring to nursing would be excluded from the search due to the significant number of articles and the focus of this research project. We will also search for studies in which the education is provided in a workplace environment (eg, residency training, clinical internships) and include terms referring to competence (eg, clinical competence, professional competence) as well as potential risks (eg, increasing age, new graduate) or supports (eg, continuing education participation, peer review) that have previously been reported. The search will be limited to articles in English, and to studies after 1980. We will employ a similar search strategy to other relevant databases, such as EMBASE and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). We will also search reference lists of identified articles and hand search key journals (eg, *Academic Medicine*, *Journal of Physical Therapy Education*). We will also include known grey literature as well as other articles flagged by reviewers as related and or potentially relevant to the review. We will use EndNote, a bibliographic management programme, to organise and share references.

Study selection

Title and abstract screening

In two teams of two reviewers we will perform pilot calibration exercises on a random sample of 100 references. Specifically, each team will apply the inclusion and exclusion criteria to a common set of titles and abstracts. Each team will meet to discuss the level of agreement, that is, whether the article was included or excluded. We will aim to reach agreement on at least 90% of the articles. Regular meetings will be set up to discuss discrepancies between the two reviewers, and the process will be repeated until we reach our predefined goal of 90% agreement.

Once both teams reach an agreement level of 90%, we will proceed to screening the full set of titles and abstracts. This calibration process will also be used to clarify and revise our inclusion criteria.

The articles resulting from our search will be divided among the reviewers. Each reviewer will independently screen the set of references and apply the inclusion criteria, using an Excel form developed for the screening process. Meetings will take place at predefined times to discuss discrepancies and reach a consensus on any articles labelled as 'consultation required'.

Inclusion criteria: Our inclusion criteria are studies that; (1) discuss a healthcare provider, (2) discuss professional or clinical competence and (3) mention a risk or support to the competence of clinicians. More specifically, we will include studies that refer to any healthcare professional,

including professions that were not specifically included in our search (eg, nurses, midwives and emergency medical technicians). We will include articles that discuss the professional or clinical competence of a clinician, in practice or in any field-based education. Although we are limiting the scope of our review to field-based education, we will include articles that discuss clinical training that is part of an educational programme (eg, clinical clerkship). Articles that mention any key aspects of competence such as described in the seven CanMEDS roles (medical expert, communicator, collaborator, manager, health advocate, scholar and professional) will be included as representing clinician competence. We will include articles that refer to a risk or support to competence. Risks may include established concepts such as wellness issues and practice transitions, but we will aim to include studies that discuss other potential risks, which may have not been previously identified. We will also include studies that mention a specific support to competence, such as continuing education participation or peer review, as well as those that explore broad supports to competence.

Data extraction

The full texts of all articles that meet the inclusion criteria in the title and abstract screening process will be retrieved (via Endnote). As with our title and abstract screening, we will first perform a calibration exercise with a random sample of 10 articles. Two teams of two reviewers will extract relevant data from each article. Once an agreement level of 90% is met within each pair, we will proceed to the full set of articles. As with the title and abstract screening, we will also use the calibration process to refine the information to be extracted.

For the extraction process, the authors will independently extract data from each article, using an online survey tool. As recommended by Arksey and O'Malley,⁷ we will extract general information about each study, such as the author, year of publication, study or article location, purpose and main findings. We will also extract data on the type of article, type of healthcare provider, how competence is described (eg, CanMEDS framework) and the risks and/or supports to clinician competence that are mentioned within the article. The CanMEDS framework has been adapted for use in various healthcare professionals (eg, the Canadian Association of Occupational Therapists, the Canadian Physiotherapy Association) and therefore is an appropriate framework. Other risks or supports that have not previously been identified will also be collected. While we will inventory the type of study design, we are not excluding articles by study design, nor will we assess quality of evidence (as recommended by Arksey and O'Malley⁷).

Synthesis and presentation of results

We will provide a numerical summary of the included studies, including the overall number of studies, general aim of the study, type of study and location. We will also

develop a summary of clinician type and level of training (eg, clinical clerk, post-baccalaureate registered nurse, etc). We will develop a comprehensive list of risks and supports to competence of clinicians that are discussed in the literature, as well.

The findings of this study will inform research and practice aimed at maintenance and enhancement of the competence of clinicians in practice.

Contributors SGT conceived the study; SGT, JH, MN and SB contributed to the protocol design and plan; SGT, JH, MN and SB worked collaboratively to draft and revise the manuscript, SGT, JH, MN and SB read and approved the final version.

Competing interests None.

Provenance and peer review Not commissioned; externally peer reviewed.

Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided

the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

REFERENCES

1. Papadakis M, Hodgson CS, Teherani A, *et al*. Unprofessional behavior in medical school is associated with subsequent disciplinary action by a state medical board. *Acad Med* 2004;7:244–9.
2. Tamblyn R, Abrahamowicz M, Brailovsky C, *et al*. Association between licensing examination scores and resource use and quality of care in primary care practice. *JAMA* 1998;280:989–96.
3. Epstein RM, Hundert EM. Defining and assessing professional competence. *JAMA* 2002;28:226–35.
4. Leape LL, Fromson JA. Problem doctors: is there a system-level solution? *Ann Intern Med* 2006;144:107–15.
5. Caulford PG, Lamb SB, Kaigas TB, *et al*. Physician incompetence: specific problems and predictors. *Acad Med* 1994;69(10 Suppl):S16–18.
6. Miller PA, Nayer M, Eva KW. Psychometric properties of a peer-assessment program to assess continuing competence in physical therapy. *Phys Ther* 2010;90:1026–38.
7. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol* 2005;8:19–32.
8. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci* 2010;5:69.