

Barriers and Facilitators Facing Early Career Researchers and Librarians in Health Professions When Conducting Systematic and Scoping Reviews: A Mixed Methods Study

Lindsey Sikora

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University of Ottawa

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Abstract

There is an increased number of systematic reviews (SRs) and scoping reviews (ScRs) published in health sciences and medicine (Bastian, Glasziou and Chalmers, 2010; Page et al., 2016). At each stage of these review cycles, different challenges can arise, especially for an early career researcher (ECR). Some of these challenges relate to inadequate or limited training in research methods, reporting standards, or the publication cycle, which results in the publication of poorly reported reviews. Early career researchers are especially vulnerable to challenges and barriers when conducting these reviews due to their lack of experience with these specific types of methodologies. In addition, librarians play a significant role in collaborating on SRs and ScRs, and often give instruction to ECRs regarding proper steps to follow when completing these reviews. While librarians may face similar challenges as ECRs when collaborating on SRs and ScRs, they also face instructional challenges when training ECRs. This two-part mixed methods dissertation seeks to investigate: (a) the challenges and barriers encountered by ECRs and librarians when performing these reviews; (b) facilitators encountered by ECRs and librarians to ease the challenges they experience; and (c) the issues experienced by librarians when instructing on SRs and ScRs, as well as solutions to aid them in better teaching these methodologies to researchers, especially ECRs. By investigating and documenting these areas, this study will build on the limited body of empirical research on challenges and barriers, as well as facilitators that ECRs and librarians experience (Ayala et al., 2019). Going forward, it will identify ways in which ECRs and librarians might improve their SR and ScR practices, thus improving the quality of medical literature for patient care. This investigation will also allow librarians to hone their teaching methods for these types of review methodologies and thus, facilitate best practices in this area.

Keywords: Early career researchers; librarians; systematic reviews; scoping reviews

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Chapter 1: Introduction

Statement of the Problem

Disciplines report thousands of primary studies and trying to keep up with the latest research in a specific field can be daunting, if not impossible. Knowledge synthesis allows researchers to keep up with this overwhelming amount of information. Synthesizing information by conducting literature reviews is not a novel idea, as many studies have often collated, evaluated, and then integrated quantitative and qualitative information. However, the quality of traditional or narrative literature reviews lacks robustness. These reviews are often biased, haphazardly put together, and reflect only the narrow perspective of the author (Mulrow, 1987). Nonetheless, systematic reviews have evolved significantly over the years, embracing increasingly sophisticated methodologies and innovations that enhance their precision and applicability. Recent advancements include the integration of network meta-analysis, which allows for comparisons across multiple interventions, and the application of machine learning techniques for more efficient data extraction and synthesis. One notable development is the implementation of dynamic living guidelines, which incorporate continuous updates to reflect the latest evidence. This approach is exemplified by the Australian living guidelines for the care of people with COVID-19, which utilize weekly updates to adapt recommendations in real-time based on emerging evidence, thereby maintaining relevance and accuracy (Tendal et al., 2021). These innovations highlight the field's ongoing commitment to refining systematic review methodologies, improving the quality and timeliness of evidence synthesis. As the field continues to advance, it underscores the importance of responsive and flexible approaches to evidence-based practice, which are essential for addressing new challenges and integrating the most current data (Higgins et al., 2023; Schmid et al., 2020).

In the fields of health sciences and medicine, the systematic review (SR) methodology has become the gold standard, with 80 SRs published *daily*. Other disciplines have also adopted and standardized this method (Page et al., 2016; Hoffman et al., 2021). This type of review can act as the basis for patient care, guidelines, and policy development in many fields, including medicine, education, and public health. More recently, the field of knowledge synthesis has seen the rise of scoping reviews (ScR), which are similar to SRs as they follow a structured process, but their purposes differ, and there are some key methodological discrepancies (Arksey and

O'Malley, 2005; Levac et al, 2010; Colquhoun et al, 2014). Over the last 20 years, the number of knowledge syntheses published in medical education and health professions education has increased by 2620%, with the rise of ScRs published increasing by 4200% (Maggio, Costello, Norton, Driessen & Artino, 2020). Scoping reviews are a valid methodology when SRs are unable to respond to the requirements of researchers, or for responding to distinct types of questions with different purposes than when conducting SRs.

Researchers, especially early career researchers (ECRs) in health professions, often struggle with systematic and scoping review methodologies, as there are many steps involved, many of which are iterative and complex. If individuals do not learn and practice strong foundational skills from the outset, they will conduct and produce a poor review (Glasziou, Altman, Bossuyt et al, 2014). Strategies are needed to help reduce this avoidable waste in research (Ioannidis et al., 2014; Moher et al., 2016; Moher et al., 2017). Systematic reviews and ScRs can help decision makers interpret the deluge of published biomedical literature. However, a SR or ScR may be of limited use if the methods used to conduct them are flawed, or if reporting is incomplete (Catalá-López, Moher, & Tabars-Seisdedos, 2016). At each stage during the review cycle, different challenges can arise, especially for an ECR. Some of these challenges include poor or limited training in research methods, standardization of reviews, and the publication process.

Librarians in health-related fields are often involved in teaching and participating in research teams for knowledge synthesis projects, including SRs and ScRs. Frequently, librarians play a dual role in SRs or ScRs, where they are instructing a research team how to properly undergo these methodologies, or they themselves are the researcher conducting the review, giving them a unique perspective as both a practitioner and researcher. Here, the term 'instructing' is used to describe not only group instruction, but also individualized research consultations, which are "one-on-one instructional session[s] between a librarian and a user in order to assess the user's specific research needs and help them find information" (Fournier & Sikora, 2015, p. 247).

Librarians possess the skills necessary for complex bibliographic retrieval, organization of copious amounts of data, and identification and verification of information, which is a necessity when conducting a SR or ScR (Desmeules, Dorgan, & Campbell, 2016). However, librarians have varying levels of experience and expertise with the different steps of these review

processes. This level of experience will determine how much instruction a librarian can offer to a researcher. The primary role of a librarian in an SR or ScR is aiding with the search strategy, however, as they grow more familiar with the process, they are then able to help with other steps such as question formulation, citation management, screening, critical appraisal, and summarization. Without a solid foundation in searching and selecting the correct databases, a librarian will find the process of a SR or ScR challenging. This lack of knowledge will hinder any further skills that they require to aid researchers with their SR or ScR, therefore, identifying current roles and building librarians' core competencies is imperative.

Several studies have identified various roles that librarians can play when participating in an SR or ScR. Though described in different ways, some of these roles include literature searcher, document supplier, reference manager, record keeper, critical appraiser, project, and manager (Beverley, Booth & Bath, 2003; Harris, 2005; McGowan & Sampson, 2005). Two studies discussed the role that librarians play in supporting grant applications and reducing waste when conducting SRs (Janke & Rush, 2014; Edmunds Otter, Wright & King, 2017). These roles are important to identify, as they help construct the core competencies required of librarians when participating in SR and ScR. Townsend and colleagues (2017) describe a competency framework for librarians involved in SR, identifying core competencies including SR foundations, process management and communication, research methodology, comprehensive searching, data management and reporting. Another ScR by Spencer and Eldredge (2018) identified roles that librarians can perform throughout a SR, which also aids in defining a librarian's role in SRs, which would then strengthen the competencies described by Townsend and colleagues (2017) or identify other competencies that need in this area.

Librarians are in a strategic position to uncover issues regarding a researcher's level of preparedness in conducting these types of studies. From this vantage point, librarians can have a significant impact by teaching ECRs about practices to properly report findings, as well as by raising awareness about which methodology might be more appropriate for their research question (Edmunds Otter, Wright, & King, 2017; Heimlich, 2014; Meert, Torabi, & Costella, John, 2016). Research waste is a growing concern (Simera et al., 2010), and librarians are part of the answer in the role they play as advocates for research integrity and transparency (Kirtley, 2016). Librarians can also act as educators in showcasing tools to ECRs that can facilitate the attainment of these principles. However, many novice librarians struggle with similar challenges

faced by ECRs, whether they are part of the research team or acting as a principal investigator.

There is a paucity of literature examining the barriers and facilitators for ECRs and/or librarians conducting SRs and ScRs in health professions. And, while there is literature in librarianship discussing the roles that librarians play in these reviews, few studies examine the dual roles that librarians have when both conducting and advising on these review methodologies, especially in HPE. Rather, the aforementioned studies primarily speak to the roles of librarians in literature reviews or survey designs, and few identify solutions to these challenges.

Purpose of this study

The purpose of this study is to identify the barriers and facilitators that early career researchers (ECRs) and librarians experience when conducting any type of systematic review (SRs) including two-group SRs, individual participant data SRs and network meta-analysis, as well as scoping reviews (ScRs). There is very little research in HPE on ECRs and librarians conducting SRs and ScRs, with each profession encountering its own unique challenges. This paucity of information directly questioning ECRs regarding their experiences with SRs and ScRs is a gap in critical knowledge in addressing the challenges, as well as potential solutions. While there have been reviews and best practice guidelines written for librarians on their roles in SRs and ScRs, few studies have addressed the challenges librarians experience in their unique role as advisor, searcher, and methodologist with these reviews.

Contributions to the field

Through this study, I am documenting and reflecting on the barriers and facilitators that ECRs and librarians experience when conducting SRs and ScRs. There is little evidence found discussing the challenges and barriers, and subsequently, the facilitators and opportunities experienced by ECRs and librarians in health professions when conducting SRs and ScRs. Furthermore, while there have been some surveys conducted identifying the roles that librarians play in helping with these types of knowledge syntheses, there is very little evidence discussing their unique challenges and barriers. My research will provide important guidance to ECRs and librarians before they undertake a systematic or scoping review, identifying their challenges, as

well as providing solutions to these barriers. Theoretically, while there have been several guidelines published identifying theories used to enhance SRs and ScRs, few studies have explicitly used a pragmatic paradigm. Practically, improving systematic and scoping review methodologies will ameliorate patient care, as well as policy and practice. I believe this study will contribute to discussions ensuring that these reviews are more strongly based in theoretical underpinnings and practical applications, which will lessen challenges and barriers encountered by early career researchers.

Overview of thesis

This thesis is organized into seven chapters. Chapter 1 includes an introduction to my thesis and research area. Chapter 2 provides a detailed literature review to describe the concepts, introduces the research questions, and includes a conceptual framework for this study. The literature review integrates empirical research on knowledge synthesis (specifically SRs and ScRs), the barriers faced by ECRs and librarians when conducting these reviews, and the facilitators used to overcome those barriers. Chapter 3 describes the methodology undertaken, as well as the epistemological assumptions inherent to this study. This chapter includes an overview of the research context, my researcher positionality and philosophical stance, and a description of the mixed methods approaches used in the research design. Chapters 4 and 5 describe the study findings. Chapter 4 provides the results from Phase 1: Surveys, which surveyed both ECRs and librarians on the barriers they encountered methodologically, interpersonally and during instructional sessions. Chapter 5 (Phase 2) explains the findings of Phase 1 of this study, which used 1-1 interviews with ECRs and librarians to explore and elaborate on the barriers of performing SRs and ScRs, while also exploring potential solutions for overcoming these barriers. Chapter 6 discusses the integration of key findings across both phases of the study, linking these findings to published empirical research in this area. Chapter 7 identifies study limitations, areas for future research, and concluding remarks on facilitating SRs and ScRs for ECRs and librarians.

Chapter 2: Literature Review and Conceptual Framework

In this chapter, I review the following bodies of literature: First, I operationalize definitions of early career researchers (ECRs), barriers, and facilitators. I then discuss the processes of systematic reviews (SRs) and scoping reviews (ScRs), in order to situate each step of these methodologies. Next, I outline the differences, similarities, and purposes of SR and ScR methodologies to define the key terms of this study. I then discuss the roles of early career researchers and librarians encounter when conducting SRs and ScRs, identifying some of the challenges that arise in the health professions. I conclude this chapter with the specific research questions I explore in this study. This conclusion includes a presentation of the conceptual framework within which I undertook my analysis of this area, and that I derived from the SRs and ScRs literature presented in this chapter.

Early career researchers

Early career researchers are investigators at research universities and hospitals who have held their positions for 5 years or less (Association of Canadian Early Health Career Researchers, n.d.). For the purposes of this dissertation, medical residents, as well as postdoctoral fellows, doctoral and master's level students in health professions are included as ECRs. Categorizing medical residents, postdoctoral fellows, and doctoral and master's level students in health professions as ECRs is a practical approach for encompassing a broad range of individuals engaged in learning and applying knowledge synthesis methods. This categorization allows for the inclusion of a diverse group who are actively acquiring expertise in research methodologies, including SRs and ScRs. For many, this classification accurately reflects their status as they are in the process of developing their research skills and understanding.

One of the key benefits of this approach is the inclusivity it provides. By including medical residents, postdoctoral fellows, and students in the ECR category, the research captures a wide spectrum of experiences related to research training and application. This inclusivity ensures that the challenges and learning curves of those new to research are represented, offering valuable insights into the effectiveness of current training programs and highlighting potential areas for improvement.

However, there are risks associated with this broad categorization. The ECR category encompasses a wide range of experience levels, which can lead to variability in the challenges faced by different subgroups. For instance, medical residents in subspecialty training or advanced PhD students may have more specialized knowledge and experience compared to those earlier in their training. This variation can impact their ability to conduct or understand complex research methods, potentially influencing the study's findings if not properly accounted for. Additionally, the needs and experiences of medical residents and PhD students can differ significantly, complicating the analysis if these distinctions are not considered.

Barriers and facilitators

Barriers are any external or internal factor that prevents or increases the difficulty for ECRs to successfully complete SRs or ScRs. These factors include time constraints, lack of adequate mentorship, or lack of proper training. Facilitators include individuals or factors that make an action or process easy or easier. For this study, this would include enabling ECRs to successfully complete SRs or ScRs.

Systematic and scoping review methodologies

What is a systematic review?

Systematic reviews began to appear in healthcare in the 1970s and 1980s (Chalmers, Hedges & Cooper, 2002). A SR “attempts to collate all empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question” (Antman et al., 1992, p. 240). It uses “explicit, systematic methods that are selected with a view to minimizing bias, thus providing more reliable findings from which conclusions can be drawn and decisions made” (Higgins & Green, 2019, p. 6). It is to establish the quality of evidence of current practice, to confirm or disprove whether that practice is based on relevant evidence, or to address any uncertainty or deviation in practice that may occur. There may be conflicting evidence within fields of research and conducting an SR would (hopefully) resolve those conflicts. There are specific circumstances in research when to conduct SRs including to (Munn et al., 2018):

- a) Uncover evidence of a specific research question;

- b) Confirm current practice, or identify any discrepancies, or identify any new practices;
- c) Identify and investigate conflicting results;
- d) Identify and advise future areas of research, and;
- e) Generate statements that inform decision-making of guidelines and policies.

There are also key characteristics that identify an SR including the following: (Liberati, Altman, Tetzlaff, Mulrow, Gøztsche, Ioannidis et al., 2009; Page, M.J., McKenzie, J.E., Bossuyt, P.M. et al., 2021):

- a) a clearly stated set of objectives with pre-defined eligibility criteria for studies;
- b) an explicit, reproducible methodology;
- c) a systematic search that attempts to identify all studies that would meet the eligibility criteria;
- d) an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias, and;
- e) a systematic presentation, and synthesis, of the characteristics and findings of the included studies.

The process for completing SRs is arduous. Researchers conducting a SR need to follow various predetermined and iterative stages that describe steps necessary to produce a rigorous synthesis of the literature in a transparent, reproducible, and unbiased way. These steps can be broken down into the acronym PIECES (Foster & Jewell, 2017), which includes: a) Planning a SR; b) Identifying studies and sources; c) Evaluating and appraising results; d) Collecting and combining data; e) Explaining the synthesis; and f) Summarizing the findings. I will describe in detail each step of the SR process below, in order to create a more in-depth picture of its methods, as well as help situate the discussion surrounding the similarities and differences from the scoping review methodology.

Planning a systematic review. Systematic reviews attempt to gather all relevant studies that address the same research question. Developing a specific research question along with inclusion and exclusion criteria is essential, as this will help identify key concepts in a search strategy. A research question should be open-ended, comprehensive, and specific. It can include

elements found in different frameworks and tools. A framework such as PICO (Population, Intervention, Comparison, and Outcome) is frequently used when devising research questions in the fields of health and medicine, though there are many other frameworks that can be used, depending on the nature of the question being asked. In addition to a specific research question, a SR requires a list of inclusion and exclusion criteria. This list will be used by researchers when screening results. Criteria could include populations, types of publication, language, years, types of study, sample size and more. These criteria can provide useful information such as keywords, subject headings, Boolean operators, limits, as well as inform which databases and other resources that could be used if appropriate.

Systematic reviews are conducted by review teams that include the principal investigator, who leads all phases of the project; content expert(s), who assist with the screening and reviewing process; graduate students, who can assist with searching, screening, evaluating; subject matter experts, who provide advice about search strategy, sources and key authors; a librarian, who develops and runs searches, manages references, contributes to the methodology; and, a statistician, who analyzes data gathered from included studies in a meta-analysis.

When planning a SR, it is important to have a protocol in place, which describes the rationale for the review and its objectives along with the research question it seeks to address. It also describes the methodology, including the search strategy that will be used to locate, select, and critically appraise studies. Finally, it explains how data from the included studies will be collected and analyzed, and how the findings will be disseminated. A useful tool to help with this process is the “Preferred Reporting Items for Systematic Review and Meta-Analysis for Protocols” (PRISMA-P) statement, a checklist intended to facilitate the preparation and reporting of a robust protocol for the systematic review (Moher et al., 2015). Writing a protocol keeps the review on track and helps reflect on any underlying assumptions about the topic while justifying and defending various decisions that were made. Once written, it is important that the protocol be registered to enhance transparency, reduce the potential for reporting biases, and avoid the unnecessary duplication of similar reviews. Once the planning stage has been completed, the review can move forward.

Identifying studies and sources. The first step to identifying studies is searching the most appropriate databases, which are dependent on your research question. Prior to commencing database searching, it is important to identify if a registered protocol or review on a similar topic

has already been conducted, which can be completed through preliminary database or protocol registry searching. If no such protocol or review exists, it is safe to move forward with the database searching for the intended review. Within health-related fields, it is imperative to select the appropriate Medical Subject Headings (MeSH) specific to each selected database, in combination with keywords and Boolean operators, in order to be as exhaustive and comprehensive as possible. The search strategy needs to be transparent and reproducible in order for other researchers to potentially arrive at the same findings as the authors. However, this is often not the case. Rethlefsen and colleagues (2024) found that the majority of systematic review (SR) searches are not reproducible, with only 1% of the randomly selected SRs in their sample being fully replicable. The study found that the majority of the SRs in their sample (91%) did not even provide enough details to identify the platforms or databases used for the searches. Published search strategies may seem reproducible, but attempting to replicate them often exposes significant discrepancies between the expected and actual results. To enhance transparency and reproducibility, systematic review searches should be recognized as crucial data and code that need to be preserved, documented, and shared.

Once having completed searching the databases, it is important to supplement the searching with studies that may not have been included in the databases, often through looking through conference abstracts, technical reports, association websites and other grey literature resources (research produced by organizations outside of the traditional commercial or academic publishing and distribution channels). Once a rigorous search through the databases and supplemental search resources has been completed, the studies can then be evaluated.

Evaluating and appraising results. The following steps should be done when selecting relevant studies for inclusion into the review:

- a) De-duplicate citations and pilot test eligibility criteria
- b) Screen titles and abstracts identified via searches using eligibility criteria
- c) Obtain full-text articles for all potentially relevant studies
- d) Select full-text articles for inclusion in a review using eligibility criteria

All studies need to be assessed for their quality. Critical appraisal is the process of carefully and systematically examining research to judge its trustworthiness, and its value and relevance in a particular context (Foster & Jewell, 2017). When appraising studies, there are

several crucial factors that need to be addressed, such as noting the type of study design in included studies based on a review question, as this will determine which valid quality assessment tool is appropriate for the review. It is imperative that two or more reviewers test the tool with a sample of included studies to ensure inter-rater reliability. Reviewers are required to carry out critical appraisal of included studies independently and in duplicate to minimize bias. Lastly, the results of the critical appraisal are tabulated and summarized.

Collecting and combining data. Oftentimes, creating a data extraction sheet ahead of time aids in a smoother collection and combining of data. Planning out the synthesis methods of the review, as well as listing all the data elements to be extracted will help develop the data collection methods. At that point, the data extraction form is created, and organizing the data from all included studies is made much simpler. The reviewer is then able to complete their synthesis and explain the findings.

Explaining the synthesis. As the results are being synthesized, the researcher may be doing so qualitatively, quantitatively, or using a mix of both approaches. There are various techniques that you can use for a narrative synthesis, along with software that can help with qualitative or quantitative synthesis.

Summarizing the findings. Once the SR is ready to be published, several factors need to be considered before dissemination, such as determining where to publish, who is the target audience, and how to make the review open access. As a final double check to ensure that the SR has met all the criteria for publication, the researcher should consult the (PRISMA) statement, ensuring that the checklist and flowchart have all been filled out appropriately. For reference, the PRISMA statement is an evidence-based minimum set of items for reporting in SRs and meta-analyses. It focuses on the reporting of reviews evaluating randomized trials but can also be used as a basis for reporting SRs of other types of research, particularly evaluations of interventions (Page et al, 2021).

Despite the benefits of SRs in addressing certain research questions, there are cases when they are inappropriate as they are unable to meet the objectives set forth by the researcher. Under those circumstances, it may be more appropriate to use another review methodology, where a broader, structured preliminary search and scoping activity may be required to act as a precursor, informing the need for a SR. A ScR is a valid methodology in these situations.

What is a scoping review?

Scoping reviews “are a form of knowledge synthesis which incorporate a range of study designs to comprehensively summarize and synthesize evidence” (Arksey and O’Malley, 2005, p. 19), with the aim of “informing practice, programs, and policy, and providing direction to future research priorities” (Colhoquon et al., 2014). While ScRs also follow many of the steps identified with the PIECES acronym, there are several differences. As opposed to SRs, ScRs do not aim to produce a synthesized and critically appraised answer to a particular question, but rather to provide an overview of the evidence. For this reason, ScRs do not require an assessment of the limits of the methods of a study, nor an assessment of the risk of bias. The implications of a ScR, from a clinical or policy making perspective, are therefore different from those of an SR.

Munn and colleagues (2018) suggested the following purposes for conducting ScRs:

- a) To clarify key concepts and/or definitions in the literature;
- b) To identify the types of available evidence in a given field;
- c) To examine how research is conducted on a certain topic or field;
- d) To identify key characteristics or factors related to a concept;
- e) To identify and analyze gaps of knowledge in literature, and;
- f) As a precursor to a systematic review.

The process for completing ScRs is similar to that of a SR, but it is more iterative in nature. Researchers conducting a ScR follow various predetermined and iterative stages required to produce a rigorous synthesis of the literature in a transparent, reproducible, and unbiased way. However, it will not follow the PIECES acronym as closely as a SR (Foster & Jewell, 2017). It can be broken down into the following steps: a) Planning a ScR; b) Identifying studies and sources; c) Charting the data; d) Explaining the synthesis; e) Summarizing the findings; and f) Consulting stakeholders. I will describe in detail each step of the ScR process, creating a more detailed picture of its methods, helping situate the discussion of its differences and similarities to a SR.

Planning a scoping review. Similar to an SR, an ScR attempts to gather all relevant studies addressing a research question. While developing the research question along with the eligibility criteria is important, the process is iterative and exploratory, with a broader scope with

less restrictive inclusion criteria. Though broader, the inclusion and exclusion criteria aid in identifying key concepts for the search strategy. While the PICO framework is considered acceptable in ScRs, other frameworks such as the PCC (Population, Concept and Context), for example, may be better suited, as they are vaster. A ScR still requires the eligibility criteria to help in the formulation of a search strategy, as well as with screening the results.

Scoping reviews are conducted by review teams formed similarly to SRs: a principal investigator, content expert(s), librarian(s), and graduate students. A statistician is unlikely to be required, as ScRs do not aim to analyze the data from the included studies. Rather, ScR aims to determine the type of evidence available on the topic and presents this evidence by charting or mapping the data. It is not required for a ScR to have a protocol in place; however, it is becoming more acceptable and expected to provide this documentation for dissemination. As with a SR, the protocol describes the rationale, the objectives and research question of the review to be addressed. It also describes the methods used, including the sources used to identify the studies, as well as the search strategy to locate those studies. As mentioned, ScRs do not tend to produce, report, and synthesize results to be appraised to determine the quality of the studies, as they provide an overview of the evidence. As such, an assessment of the risk of bias or methodological limitations are not generally performed within a ScR, unless the purpose of the ScR specifically requires it (Khalil et al. 2016; Peters et al. 2015).

Identifying studies and sources. This step of the ScR is performed similarly to a SR, using the appropriate databases with MeSH in combination with keywords and Boolean operators. The search strategy must be transparent and reproducible for all databases. A supplementary search involving other sources such as grey literature and non-commercial publications needs to be considered. As the review question may be broad for a ScR, it may be appropriate to search all sources of evidence (e.g., primary studies, editorials, opinion articles), whereas a SR usually focuses on using only primary studies. The relevancy of these sources will also depend on the topic of the review and its objectives. This all-encompassing approach will lead to greater sensitivity in the search, which is desirable for a ScR. As the search for an ScR may be iterative as a researcher becomes more familiar with the literature on the topic, additional sources, as well as keywords and search terms may be discovered and incorporated in the search strategy. If this is the case, as previously mentioned, it is imperative that the entire search strategy and results be reproducible and transparent. As with an SR, an ScR should describe the

process of screening studies for all stages of selection (title/abstract and full-text), detailing the procedures used for resolving disagreement between reviewers.

Charting the data. In ScRs, the data extraction stage is often called “data charting” (Peters et al., 2020). The researcher provides a logical and descriptive summary of the results that aligns with the research question and objectives of the ScR. A descriptive summary of the main results must be included based upon the review’s eligibility criteria. A draft charting table or form needs to be developed and piloted at the protocol stage. Two authors should independently extract data from the first 5 to 10 included studies using the data charting form and meet to determine whether their approach to data extraction is consistent with the research question and purpose. It should record key information from the study, including author(s), citation information, and findings relevant to the research question of the ScR. The charting table may be required to be further refined and updated at the review stage.

Explaining the synthesis. Scoping reviews do not synthesize the findings of the included sources of evidence (as this is more appropriately conducted in a SR). Rather, a researcher will extract the results from the ScR and descriptively map the evidence for thematic analysis. Thematic analysis may include recording simple frequency counts of populations, characteristics, concepts, or other data. Though the extracted results can be analytically mapped, this is more typically conducted in SRs. However, a researcher may decide to perform a more detailed analysis using descriptive qualitative content analysis. In this case, the ScR would provide a summary of data coded to a specific category. Alternatively, researchers can also choose to investigate ScRs in terms of quantitative data using more advanced methods than simple frequency counts. While this is not normally required in ScRs, a researcher may consider this type of analysis depending on the purpose of the review. It is very unlikely that an interpretive quantitative analysis or meta-analysis will be required for an ScR.

Summarizing the findings. The main purpose of charting the data for a ScR is to identify, characterize and summarize the findings on a topic, including identifying research gaps (Nyanchoka et al, 2019). The results of the ScR should be presented as a map of the data extracted from included studies that align with the review’s objectives. The concepts from the PCC inclusion criteria may help guide how the data should be mapped most suitably. As a final double check to ensure that the ScR has met all the criteria for publication, the researcher should consult the “Preferred Reporting Items for Systematic Review and Meta-Analysis for Scoping

Reviews” (PRISMA-ScR), an extension of the original PRISMA statement (Tricco et al., 2018). Researchers should consider the meaning of the findings as they relate to the overall purpose of the study, discussing implications for future research, policy, and practice.

Stakeholders’ consultation. Arksey and O’Malley (2005) discussed the ‘optional extra’ benefit of including the consultation of stakeholders as ‘added value’ to the scoping review methodology. In their 2010 study, Levac, Colquhoun, and O’Brien (2010) emphasized this stage as an essential component of the ScR methodology. They outline clear next steps for this stage: a) clearly establish a purpose for the consultation; b) preliminary findings can be used as a foundation to inform the consultation; c) clearly articulate the group of stakeholders to consult, and how the data will be collected, analyzed, reported and integrated into the overall study outcome, and; d) incorporate opportunities for knowledge transfer and exchange with stakeholders.

What are the similarities and differences between systematic and scoping reviews?

Researchers often confuse the appropriateness of undertaking a SR over a ScR, and vice versa. A concise overview of the similarities and differences between SRs and ScRs across various aspects is presented in Table 1.

Table 1 *Similarities and differences between systematic and scoping reviews*

Aspect	Systematic Reviews	Scoping Reviews
Purpose	To answer a specific research question by synthesizing all relevant evidence.	To map the existing literature on a broad topic or research area, identifying gaps in knowledge.
Research Question	Focused and specific (e.g., effectiveness of a treatment).	Broad and exploratory, often addressing multiple questions.
Study Inclusion Criteria	Strict and predefined criteria based on study design, quality, and relevance.	Flexible criteria to include a wide range of study designs and evidence types.
Data Analysis	Typically involves quantitative synthesis (e.g., meta-analysis) or qualitative synthesis (e.g., thematic analysis).	Descriptive, with narrative summaries or thematic categorizations.
Outcome	Provides a conclusive answer based on existing high-quality evidence.	Provides an overview of the research landscape, identifying gaps and areas for further study.

Aspect	Systematic Reviews	Scoping Reviews
Time and Resources	More time-consuming and resource-intensive due to rigorous methods and data synthesis.	Typically, quicker and less resource-intensive, with broader scope and less rigorous analysis.
Quality Appraisal	Critical appraisal of included studies is a key component, often excluding studies of lower quality.	Quality appraisal is not always necessary; studies are included regardless of quality to map the scope.
Types of Evidence	Focuses on high-quality studies (e.g., randomized controlled trials, systematic reviews).	Includes a wide range of evidence, including qualitative studies, gray literature, and expert opinions.
Examples of Use	Answering questions about clinical effectiveness, policy decisions, and evidence-based practice.	Identifying key concepts, types of evidence, and gaps in research to inform future studies or policy.
End Goal	To inform clinical practice or policy with definitive evidence-based conclusions.	To explore the breadth and depth of a field, often leading to future systematic reviews.

There are specific examples of these differences such as if a researcher's question addresses the meaningfulness, appropriateness, feasibility, or effectiveness of a certain treatment, then a SR is likely the most suitable methodology. Conversely, if the researcher does not want to focus on questions relating to the effectiveness of medical interventions, and would rather identify certain characteristics or concepts in papers or studies, including the mapping, reporting or discussion of these characteristics or concepts, then an ScR would be the more appropriate choice (Munn et al., 2018).

All of the steps conducted in a SR are similar to those undertaken in a ScR, including planning out the ScR with proper question formulation, comprehensive and exhausted searching methods in databases and other resources, evaluating the studies with two independent reviewers, extracting the data and synthesizing the results, and lastly, summarizing the findings for the appropriate audience. ScRs serve a different purpose than SRs, as ScRs will ideally either determine the scope of a body of literature on a topic, as well as an overview of its focus (detailed or broad), or examine emerging evidence to a question that is unclear, and better posed by a question for a more precise SR. Therefore, the critical appraisal of studies is not a step that is required to be included in a ScR.

When researchers conduct various forms of knowledge synthesis, there are specific eligibility criteria that need to be met. There are tools that can help guide researchers through steps to meet these criteria, such as the PRISMA statements and its extensions (as described

above). These statements include checklists and flowcharts that help researchers navigate each stage of different knowledge syntheses, including SRs and ScRs. Other extension statements include PRISMA-P, which was developed to facilitate the development and reporting of SR protocols. It includes a detailed, 17-item checklist that can be used when writing a protocol, which is part of the planning stage of the SR (Moher et al., 2015). Researchers producing health-related SRs can register their protocols using a registry called PROSPERO, though not for ScR protocols.

Alternatively, checklists for conducting ScRs have been limited, as a formal protocol is not considered a requirement for a ScR (Thomas, Lubarsky, Durning & Young, 2017). Tricco and colleagues (2018) published the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR), which is a checklist that contains 20 essential reporting items and 2 optional items to include when completing a ScR. This much needed checklist is the first of its kind for ScRs, taking over 2 years of development before it was ready for publication. Many ScRs will cite this tool as the guideline that they followed to ensure the scientific integrity and reproducibility of their review, adding to the theoretical framework of ScRs. Currently, there is no PRISMA statement for ScR protocols, though researchers often follow an amended PRISMA-P statement for SRs, omitting the evaluation criteria.

Barriers faced by ECRs and librarians conducting systematic and scoping reviews

Level of experience. The level of experience and expertise of researchers and librarians influences the ease felt when conducting SRs and ScRs. Early career investigators noted that barriers included the lack of confidence in their skills (Beverley, Booth & Bath, 2003; Shepherd, 2013), managing the feasibility and scope of the review (Farrokhyar, Amin, Dath, Bhandari, Kelly, Kolkin, et al., 2014; O'Brien, Colquhoun, Levac, Baxter, Tricco, Straus et al, 2016; Shepherd, 2013), lack of knowledge surrounding the terminology and methods for each review type (Anuradha, Jacob, Shyamkumar & Sridhar, 2013; Shepherd, 2013), lack of awareness of resources to aid with the workflow throughout the review (Anuradha, Jacob, Shyamkumar & Sridhar, 2013), and a lack of motivation or incentive to complete a review (Shepherd, 2013). Librarians often take on the role of methodologist when conducting SRs and ScRs, by guiding researchers through the process and discussing the SR or ScR methods when considering the research question being posed (Martin, Boruff & Gore, 2016). However, librarians require

similar training and face similar challenges encountered by ECRs when completing a SR or ScR, therefore, the abovementioned issues facing expertise are also applicable to them. There is also a paucity of literature on the interpersonal challenges faced by librarians when conducting SRs and ScRs, which influences not only a librarian's level of expertise, but will also influence the guidance given to an ECR. Therefore, it is imperative to consider the level of experience for ECRs and librarians as methodological and interpersonal.

Time. The time allotted for conducting a SR or ScR is one of the most common barriers to completing one of these reviews (Anuradha, Jacob, Shyamkumar & Sridhar, 2013; Beverley, Booth & Bath, 2003; Himelhoch, Edwards, Ehrenreich & Lubner, 2015; O'Brien, Colquhoun, Levac, Baxter, Tricco, Straus et al, 2016; Shepherd, 2013). Several studies indicated that insufficient time to complete the project was an issue (Anuradha, Jacob, Shyamkumar & Sridhar, 2013; Shepherd, 2013), while others observed that the time needed to complete the review was longer than anticipated (Beverley, Booth & Bath, 2003; O'Brien, Colquhoun, Levac, Baxter, Tricco, Straus et al, 2016). An emphasis was also placed on the importance of having protected time to complete the work (Himelhoch, Edwards, Ehrenreich & Lubner, 2015).

Understanding of methods. The complexity of SRs and ScRs methodologies relating to the scope of the research question, as well as the scope of the intricacies around these methodologies are barriers to completing these reviews (O'Brien, Colquhoun, Levac, Baxter, Tricco, Straus et al, 2016; Shepherd, 2013). The lack of knowledge or clarity around terminology for these reviews is often misunderstood, which is also a contributing factor viewed as a barrier (Shepherd, 2013). The more difficult tasks included data analysis, with several studies reporting challenges performing statistical analysis (Beverley, Booth & Bath, 2003; Anuradha, Jacob, Shyamkumar & Sridhar, 2013; Shepherd, 2013), as well as interpreting the results of a meta-analysis (Shepherd, 2013). Searching the literature, specially producing an adequate search strategy proved to be difficult and time-consuming for ECRs (Bonfield, 2018; Farrokhyar et al., 2014; O'Brien et al., 2016). Other challenges included the lack of previous training for critical appraisal (Anuradha, Jacob, Shyamkumar & Sridhar, 2013; Shepherd, 2013), formulating an appropriate research question (Farrokhyar et al., 2014; O'Brien et al., 2016; Shepherd, 2013) and developing inclusion and exclusion criteria (Farrokhyar et al., 2014; O'Brien et al., 2016).

Training and mentorship. Insufficient guidance and mentorship throughout the SR or ScR process is a barrier experienced by many ECRs and librarians (O'Brien, Colquhoun, Levac,

Baxter, Tricco, Straus et al, 2016; Shepherd, 2013). There is also a lack of funding for training for these reviews, which also hinders the ability of an ECR to learn the appropriate methodologies (Shepherd, 2013). Funding is also sparse for librarians wanting to conduct SRs and ScRs whether for training or other professional development opportunities to further their skills (Gore & Jones, 2015).

Support for publication. Researchers in academic institutions often adhere to the “publish or perish” mentality (Bretag, 2012). These publications by researchers are linked to measures of personal and institutional performance, used as performance-based metrics for quality and are similar to the metrics underpinning international institutional rankings (Academic Ranking of World Universities, 2011). A range of indices evaluate the publication outputs of researchers and academic institutions (Linton, Tierney, & Walsh, 2011; Shelton, Foland, & Gorelsky, 2009). These indices influence the competition of limited funding and employment (Fanelli, 2010; Nicolini & Nozz, 2008; Young, Ioannidis, & Al-Ubaydli, 2008). For these reasons, there is considerable pressure in academia to publish, especially in journals with high impact factors (Bretag, 2012). Systematic reviews and ScRs are often an ECR’s first opportunity to publish (Pickering, Grignon, Steven, Guitart & Byrne, 2015), therefore this mentality acts as a barrier, especially if the ECR doesn’t possess the adequate skills to complete the review. Many academic librarians also adhere to this mentality, but it varies across institutions. It is also not as likely that librarians in hospitals or other special libraries are subject to these performance measures, as publishing is often a secondary consideration. To move beyond the traditional “publish or perish” model, institutions are adopting more comprehensive strategies to evaluate academic performance and impact. One significant shift is towards broader impact metrics, which assess research based on its societal, economic, or environmental contributions rather than just publication counts (Bornmann, 2017; Ravenscroft et al, 2017). This approach values research’s influence on public health, policy, and community well-being. Institutions are also expanding their evaluation criteria to include various types of scholarly outputs, such as data sets, software, and patents, while incorporating qualitative assessments like peer reviews and case studies to provide a richer understanding of a researcher’s contributions. Initiatives such as the Declaration on Research Assessment (DORA) and the Coalition for Advancing Research Assessment (CoARA) play a crucial role in these changes. DORA promotes moving away from journal impact factors as the primary measure of research quality, advocating for a more nuanced

evaluation of research outputs. CoARA builds on this by developing frameworks and guidelines to support diverse and equitable assessment practices. These organizations drive the adoption of alternative metrics (altmetrics), emphasize open science and reproducibility, and encourage holistic evaluation frameworks that consider research impact, mentorship, teaching, and service to the academic community.

Facilitators used by early career researchers and librarians when conducting systematic and scoping reviews

Support for publication. In order to boost their publication output, many universities are providing practical support for ECRs and academic librarians, such as professors or librarians at the start of their academic career or graduate students. Universities are developing publication workshops, writing groups, and other types of practical training, and in addition for graduate students, there is greater involvement of their supervisors in the publication process (Chapman & Veras-Estévez, 2024). Research suggests that there are many benefits from these types of programs, including increasing the rates of publication (Vogel et al., 2019) (). As mentioned, this focus on publication is not limited to novice researchers but is also encouraged for graduate students during their candidature (Aitchison et al., 2012), because it increases the standing of the students, their supervisors, and the institution. In many disciplines, a publication list is mandatory for ECRs, as it affects their ability to secure their first academic position (Wilson, 2002; Robins & Kanowski 2008; Fritsche, King, Miller & Lam, 2022). Universities can significantly boost their publication output and research visibility by effectively utilizing preprints and other forms of scholarly publications. One key strategy is to encourage preprint submissions, allowing researchers to share their findings quickly with the academic community and receive early feedback. Institutions can create a supportive environment for preprints by providing guidance on suitable preprint servers and integrating preprints into their research assessment frameworks. Recognizing the value of preprints in showcasing early-stage research helps foster a culture of openness and rapid dissemination. Aligning with CIHR's updated policy on preprints (Government of Canada, Canadian Institutes of Health Research, 2023), which supports the inclusion of preprints in grant applications, further reinforces this approach. This

policy reflects a broader acceptance of preprints as a legitimate form of scholarly communication and demonstrates CIHR's commitment to accelerating research visibility and impact.

Supporting open access publishing is another critical approach. By promoting open access, universities can increase the visibility and accessibility of research outputs. Institutions can assist researchers by providing funding or subsidies for open access fees, establishing agreements with publishers for discounted or free open access options, and maintaining institutional repositories for archiving publications. These repositories serve as a platform for depositing preprints, final articles, and supplementary materials, ensuring that research findings are freely available to a global audience and enhancing the institution's scholarly impact.

Universities can also boost their publication output by facilitating collaboration and networking opportunities for researchers (Rossoni, de Vasconcellos, de Castilho Rossoni, 2024). Organizing interdisciplinary research seminars, workshops, and conferences, as well as supporting participation in national and international research networks, encourages collaboration that often leads to increased co-authored publications. Additionally, providing research support and training on effective publication strategies, manuscript preparation, and navigating the peer-review process helps researchers improve their writing skills and understand the publication landscape. Finally, recognizing and incentivizing scholarly contributions through awards, internal recognition programs, and performance evaluations can motivate researchers to increase their publication activities and engage with diverse forms of scholarly communication.

Literature reviews, such as SR and ScR, are often the first output of researchers new to a field (Pickering et al., 2015), therefore, it is imperative that they are taught the correct methods from the beginning. Often, when conducting a SR or ScR, ECRs do not have the foundational skills required to ensure the quality of the reviews they are conducting. While a publication list may not be mandatory for librarians (depending on their affiliation such as a hospital environment, which may not require publications from their librarians), some academic librarians are on tenure-track, thus requiring similar support as ECRs.

Level of experience. Bonfield (2018) observed that the importance of having a well-rounded team with methodological expertise, a strong project management plan and open communication among team members were all factors critical to the success of completing these reviews. A versatile project team includes a principal investigator, content expert(s), graduate students, a librarian and sometimes, a statistician, each with roles specified at the beginning of

the SR or ScR to ensure clear communication and expectations. A combination of experience allows for distinct roles and skills to be learned, ensuring a higher quality review is completed.

Time. Several studies indicate that ensuring protected time to perform tasks, as well as rigour in feedback and assessment motivated ECRs to complete these projects through to the end (Dudden & Protzko, 2011; Farrokhyar et al., 2014; Himelhoch, Edwards, Ehrenreich & Lubner, 2015). Dengel and colleagues (2009) found that resident research days and dedicated research time increased the number of manuscript submissions and publications for general surgery residents, while Ruiz et al (2011) observed that a 3-year internal medical residency research curriculum produced significantly more presentations at national conferences, as well as peer-reviewed publications, compared to residents who did not partake in the curriculum. Librarians who spent more hours (over 20 hours) working on SRs reported a decrease in burnout compared to librarians who had fewer hours (less than 10) to complete an SR (Demetres, Wright & Derosa, 2020). Librarians with protected time to work on SRs and ScRs produce a higher quality review and experience less burnout.

Training and mentorship. A key facilitator in the successful completion of these study types included having access to mentors for guidance (Farrokhyar, Amin, Dath, Bhandari, Kelly, Kolkin, et al., 2014; Himelhoch, Edwards, Ehrenreich & Lubner, 2015; Shepherd, 2013). Studies also suggested that being exposed to a structured framework approach for training (Himelhoch, Edwards, Ehrenreich & Lubner, 2015; Shepherd, 2013) and practice-based learning by completing project tasks of a systematic review were imperative to fully understanding the process (Shepherd, 2013). The opportunity to communicate with experienced and responsive faculty and trainers was deemed valuable (Dudden & Protzko, 2011; Himelhoch, Edwards, Ehrenreich & Lubner, 2015). One study indicated that guidance from a librarian in conducting literature searching was essential (Bonfield et al., 2018).

Early career researchers and librarians in health professions education conducting systematic and scoping reviews

Health professions education (HPE) research tends to occur in heterogeneous settings, with a diverse group of learners with a differing range of competencies and skills in an assortment of educational settings. This is problematic for SRs and ScRs being conducted in HPE, as it is challenging to standardize experimental conditions which are often incompatible in

many HPE research contexts using a variety of investigative approaches. Adding to this challenge is the care required to synthesize this evidence for dissemination and implementation of the results derived from the research that is not only heterogeneous, but that also utilizes a plethora of methodologies.

There is little research in HPE for ECRs and librarians conducting SRs and ScRs. A pre-print of a scoping review identified only 8 studies that described the challenges experienced by ECRs while performing these reviews in health professions (Ayala et al., 2019). Curriculum-based programs such as evidence-based courses and research methods classes comprised of the most used method of assessment for the success of the conduction of SRs and ScRs for ECRs, either through grades or publication (Farrokhyar, 2014; Himelhoch, Edwards, Ehrenreich, & Luber, 2015; Bonfield, Fearnside, & Cramp, 2018). Others used questionnaires, surveys, and interviews to ascertain the experiences of ECRs in evidence-based practice courses, though not explicitly regarding SRs or ScRs (Anuradha, Jacob, Shyamkumar, & Sridhar, 2013; O'Brien et al., 2016; Gorczynski, Burnell, Dewey, & Costello, 2017; Panczyk, Cieślak, Zarzeka, Jaworski, & Gotlib, 2019). Only one study conducted interviews specifically asking novice health promotion researchers about their experiences participating in SRs and ScRs (Shepherd, 2013). This paucity of information directly questioning ECRs regarding their experiences with SRs and ScRs is a gap in critical knowledge in addressing the challenges, as well as potential solutions, for this target audience.

Summary and Research Questions

In this section, I remind the reader about the objectives of this thesis. I will also introduce the research questions that this thesis explores. In the last subsection, I present and briefly describe the conceptual framework derived from the literature above and used to guide this thesis. Overall, the literature indicates that many ECRs struggle with barriers to SR and ScR methodologies including a) support for publication; b) experience and expertise; c) time, and; d) training and mentorship. Conversely, these barriers can transition to facilitators, given the appropriate opportunities and guidance. Given these issues and opportunities, the following research questions, which focus on barriers, facilitators, and experiences by both ECRs, and librarians guided my two-part mixed methods research project:

Phase I: Surveys with ECRs and librarians

1. What are the barriers ECRs in health professions face when conducting SRs and ScRs?
2. What are the barriers librarians in health professions face when conducting SRs and ScRs?
3. What are the barriers librarians in health professions face when instructing how to conduct SRs and ScRs?

Phase II: Interviews with ECRs and librarians

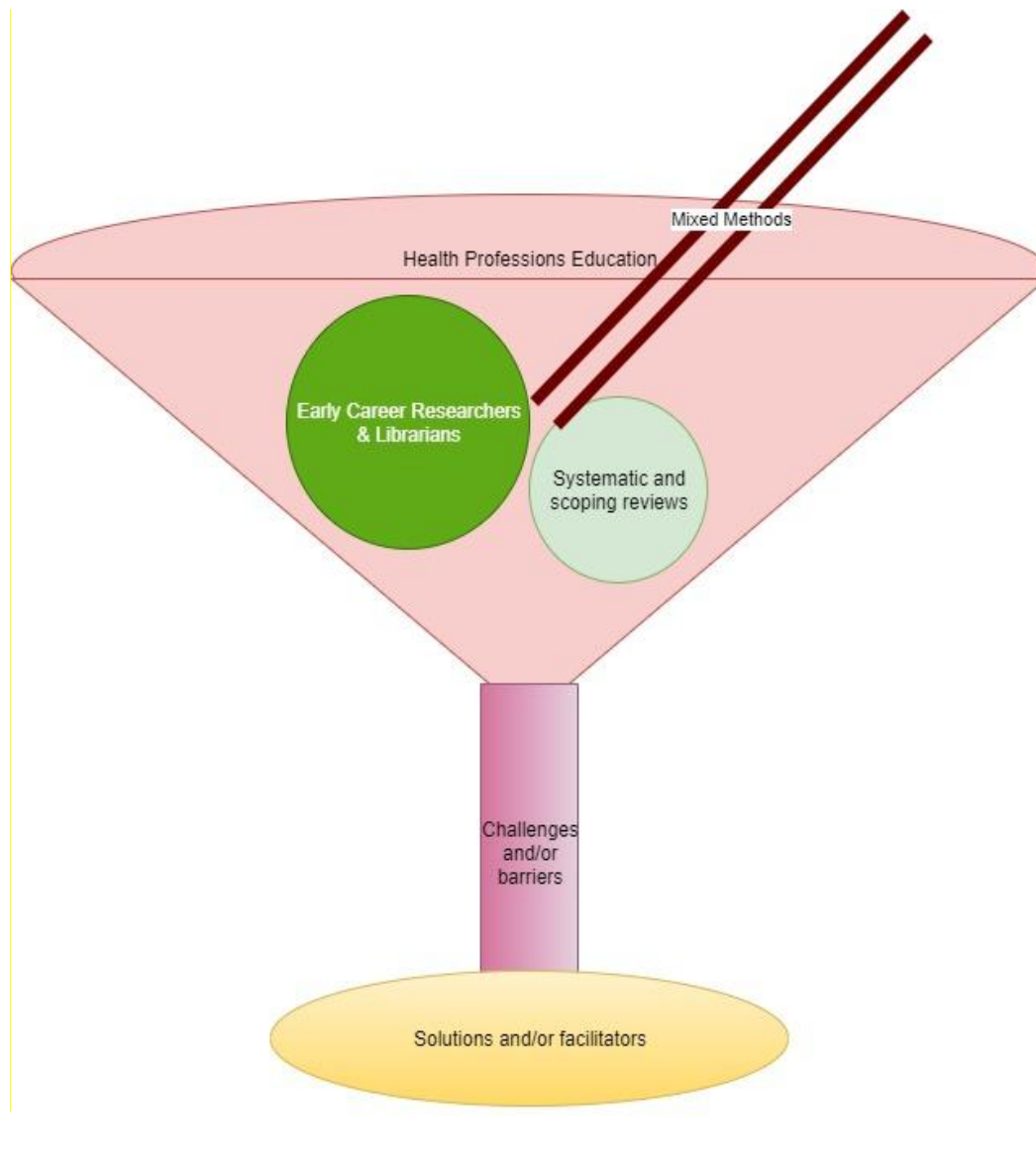
1. What are potential facilitators and solutions to overcoming the barriers that ECRs in health professions face when conducting SRs or ScRs?
2. According to ECRs, how can librarians better support ECRs when conducting SRs and ScRs?
3. What are potential facilitators and solutions to overcoming the barriers that librarians in health professions face when conducting SRs or ScRs?
4. According to librarians, how can librarians better support ECRs when conducting SRs and ScRs?

Conceptual Framework

As previously mentioned, the objectives of this study are to explore the (a) barriers and challenges ECRs and librarians experience when conducting and instructing on SRs and ScRs, and (b) facilitators and solutions to these barriers and challenges. Derived from the above literature review, the conceptual framework combines the following three components: (1) systematic and scoping reviews, (2) ECRs and librarians in health professions, and (3) HPE using mixed methods. When coupled, these components lead to specific barriers and challenges ECRs and librarians face when conducting and instructing on SRs and ScRs in HPE. These issues bottleneck throughout these review processes until facilitators and solutions are found to remove the barriers. Ultimately, I expect this work to contribute to empirical research on SRs and ScRs methodologies by providing ECRs and librarians with facilitators to overcome barriers and challenges encountered when pursuing these review types. A visual diagram of this

framework is provided below (Figure 1). Serving as the preliminary guide for this study, this conceptual framework will evolve as the study progresses and new concepts and themes emerge.

Figure 1 *Conceptual framework of using mixed methods to examine ECRs conducting systematic and scoping reviews*



Chapter 3: Epistemology and Research Design

In this chapter, I provide a discussion of my epistemological approach, as well as how I constructed my study. First, I begin with my positionality as a medical librarian and active member of the study group. Next, I discuss the research design I applied to the study: a two-phase sequential mixed method research (MMR) design, as well as an examination of pragmatism as an epistemology, and how this theory reflects my views on my interaction with the current study. Lastly, I close the chapter with the ethical considerations of this study.

Research Positionality

Over the span of more than a decade, I have dedicated myself to the field of academic librarianship within the health sciences domain. Throughout this journey, my primary focus has been on guiding and instructing early career researchers (ECRs), which includes graduate students and junior faculty members, on how to conduct knowledge synthesis, particularly systematic reviews (SRs) and scoping reviews (ScRs). My experience extends beyond mere instruction; as a methodologist, I've actively contributed to numerous SRs and ScRs, providing me with a unique insider perspective into the research process. In this multifaceted role, I've come to understand that as librarians, we wear many hats in the realm of health professions education. We're not just educators; we're also information specialists, tasked with not only imparting knowledge but also navigating the vast sea of information to extract what is relevant and useful.

Recognizing the dual nature of our role, I've made it a point to reflect on my experiences and viewpoints within this context. To foster reflexivity, I've maintained a journal where I document ideas and discussions, integrating them into my thesis data and analysis. These insights often stem from conversations with fellow librarians, delving into the myriad challenges we encounter when collaborating with ECRs on research projects, particularly SRs and ScRs. In such collaborations, librarians assume multiple roles, from searcher and screener to methodologist and technological advisor. However, much of our labor remains invisible, encompassing tasks such as framing research questions in a manner conducive to answering them, deciphering the true intent behind the questions posed, and managing the expectations of ECRs (Ross-White, 2021). Engaging in discussions with fellow librarians about addressing these

challenges has not only enriched my understanding but has also contributed valuable insights to my thesis data and analysis. By collectively brainstorming and implementing solutions, we strive to enhance the efficiency and effectiveness of our collaborations with ECRs, ultimately advancing the field of health sciences research.

Research Design

This research study followed a two-phased, explanatory sequential mixed methods design. Phase I encompassed the collection and analysis of quantitative survey data. The findings from Phase I informed the participant level questions for Phase II, which comprised of the collection and analysis of qualitative interview data. Both quantitative and qualitative study phases were equally important in terms of addressing the research problem (Creswell & Plano Clark, 2018). Each phase was separately analyzed but the quantitative and qualitative findings are merged for the discussion section (Creswell & Plano Clark, 2018). I will explain the specific methods for Phase I and Phase II in subsequent chapters.

Defining mixed methods

It is generally understood that MMR is considered an approach to research that combines quantitative and qualitative data or findings, and interprets these findings together (Creswell, 2015; Creswell & Plano Clark, 2018). A practical definition of MMR can include the “collecting, analyzing, and interpreting of both qualitative and quantitative data in a single study, or series of studies that investigate the same underlying paradigm” (Leech & Onwuegbuzie, 2009). Broadly speaking, Tashakkori and Teddlie (2003) imply that MMR has its own worldview (paradigm), vocabulary and techniques, with a separate methodological orientation. More recently, Creswell and Plano Clark (2018) combine these two interpretations, using *core characteristics* to define MMR. These characteristics incorporate considerations from philosophical perspectives, research designs and methods. MMR involves the researcher:

- collecting and analyzing both qualitative and quantitative data rigorously in response to research questions and hypotheses,
- integrating (or mixing or combining) the two forms of data and their results,
- organizing these processes into specific research designs that provide the logic and procedures for conducting the study, and

- framing these processes within theory and philosophy.

While scholars have defined MMR in numerous other ways, there have been conflicting perspectives surrounding these descriptions (Johnson, Onwuegbuzie, & Turner, 2007). I believe that the above-mentioned definition put forth by Creswell and Plano Clark (2018) is the most holistic and comprehensive approach to MMR, as it encompasses paradigms, theoretical lenses *and* methods. By drawing on the strengths of both qualitative and quantitative approaches, a thorough understanding of the inquiry or inquiries under investigation can be achieved (Brewer & Hunter, 1989; Creswell, 2015).

The integration of qualitative and quantitative procedures can occur at multiple levels, including at the design, methods, interpretation, or discussion level (Creswell & Plano Clark, 2018; Doyle et al., 2016; Johnson et al., 2007). This combination can also occur simultaneously throughout the different levels. For example, Creswell and Plano Clark (2018) describe three main typologies for MMR which include: 1) the convergent design, where the data can be simultaneously collected and analyzed separately before being combined; 2) the explanatory sequential design, which has two distinct interactive phases -- the data is first collected and analyzed quantitatively, followed by a collection of qualitative data in order to explain or expand on the quantitative results initially collected; and lastly, 3) the exploratory sequential design, where the first phase of data collection and analysis is qualitative data. This is followed by a development phase of designing a quantitative item based off of the results of the qualitative analysis, which is then followed by a third phase where the researcher tests the new item quantitatively, interpreting how the quantitative results build from the qualitative results obtained from the first phase. The mixing of qualitative and quantitative approaches is foundational to MMR (Johnson et al., 2007). A number of methodologists have agreed that MMR can: a) provide a deeper understanding of the research question, b) validate and amplify findings from another approach to produce findings that are more comprehensive and internally consistent, c) handle risks that question the validity and gain deeper and fuller knowledge of the question, d) provide more detailed understanding and greater confidence in conclusions, and e) provide more meaningful and richer answer to the research question (Johnson et al., 2007).

Creswell and Plano Clark (2018) identified seven logical reasonings for which MM could be used:

- 1) A need exists to obtain more complete and corroborated results,
- 2) A need exists to explain initial results,
- 3) A need exists to first explore before administering instruments,
- 4) A need exists to enhance an experimental study with a qualitative method,
- 5) A need exists to describe and compare different types of cases,
- 6) A need exists to involve participants in the study, and
- 7) A need exists to develop, implement and evaluate a program.

The impact of these reasonings can be illustrated by Collins, Onwuegbuzie and Sutton (2006), who identified four rationales for conducting MMR: a) instrument fidelity (such as creating new instruments, assessing the appropriateness of existing instruments, or monitoring the performance of human instruments), b) participant enrichment (such as mixing qualitative and quantitative methods to enhance techniques that use samples that include recruiting participants), c) treatment integrity (such as assessing the fidelity of interventions), and d) significance enhancement (which includes facilitating the richness of the data, augmenting the interpretation and usefulness of the findings). These rationales are of utmost importance in HPE research because it permits the evaluation of the appropriateness, effectiveness, and feasibility of an educational intervention, which are process measurements that are often lacking in this topic area (Evans, 2003; Regehr, 2010).

Epistemological Approach: Pragmatic View of Knowledge

As researchers, we view epistemology as the theory of knowledge in regard to its methods, scope, and validity; how we come to know what we know (Davis, 2004). This study will follow a pragmatic approach. Ormerod (2006) defined pragmatism as a “philosophical doctrine that can be traced back to the academic skeptics of classical antiquity who denied the possibility of achieving authentic knowledge regarding the real truth and taught that we must make do with plausible information adequate to the needs of practice (p. 892). This means researchers need to forget about fixed ideas and theories, and just deal with the actual facts related to the problem they're working on. The goal is to solve the problem. Webb (2007) outlined four key aspects of classical pragmatism. First, pragmatists believe in an external world that exists independently of our perception, governed by natural laws. However, they see

theoretical entities as constructs of thought used to make empirical predictions, not as independent realities. Second, skepticism isn't essential for seeking truth; starting with absolute certainty isn't required (Webb, 2007, p. 1068). Third, all beliefs can be fallible. Finally, classical pragmatism holds that neither scientific knowledge nor common sense is inherently superior; both can be relevant depending on the context of the inquiry, which includes the perspectives and purposes involved (Webb, 2007, p. 1069). Considering this brief overview of classical pragmatism, researchers who are strictly dedicated to either the quantitative or qualitative paradigm and cannot tolerate any deviation should avoid using methods that conflict with their approach. However, researchers who believe that the aim of any inquiry should be the betterment of humanity, that rigid paradigms hinder problem-solving, that an external reality exists despite the absence of absolute theoretical principles, and that all forms of knowledge should be utilized to understand a phenomenon, may indeed engage in mixed methods research.

Pragmatism is strongly associated with MMR, where the focus is on the consequences of research and adopting an advantageous strategy based on what works in practice (Creswell & Plano Clark, 2018). Tashakkori and Teddlie (2003) have argued that pragmatism is the most useful 'worldview' to support MMR. It is an attractive and well-developed epistemological stance for integrating approaches and perspectives (Johnson, Onwuegbuzie & Turner, 2007). I believe that pragmatism offers philosophical justification and logic for mixing methods and approaches in health professions education (HPE). For the former, using pragmatic epistemic standards lends towards this justification, while the latter uses the combination of ideas and methods to best frame and address a research question, thus providing tentative answers. As HPE research involves a complexity of issues, employing a quantitative or qualitative approach alone may be insufficient (Lavelle, Vuk, & Barber, 2013).

In my study, I am using pragmatism because, as an epistemological approach, it focuses on practical outcomes and problem-solving, rather than adhering to fixed theories or rigid paradigms. According to Ormerod (2006), pragmatism acknowledges the impossibility of achieving absolute knowledge and instead emphasizes using plausible information to address practical needs. This approach aligns with my aim to address the problem at hand effectively, leveraging real-world facts and empirical data. Pragmatism offers several benefits to health professions education (HPE). It emphasizes practical problem-solving, focusing on developing educational strategies and curricula that directly address the needs of healthcare professionals

and improve patient care outcomes. With its flexible approach to methodology, pragmatism supports the use of both qualitative and quantitative research methods, allowing educators and researchers to choose the most effective tools for their specific questions. This flexibility is crucial in comprehensively addressing complex issues in HPE. Pragmatism also values the integration of diverse perspectives, recognizing the importance of both scientific knowledge and common sense. This leads to a more holistic understanding of educational practices and their impacts.

Moreover, pragmatism is outcome-oriented, prioritizing educational interventions that lead to improved competencies, skills, and patient care practices. Its adaptability to new information and changing circumstances is particularly valuable in HPE, where continuous updates to educational content and methods are necessary due to evolving medical knowledge and technologies. The pragmatic approach encourages collaboration across disciplines, fostering innovative and effective educational strategies by bringing together insights from medicine, education, psychology, and other fields. Additionally, pragmatism supports the use of mixed methods research, providing a richer, more nuanced understanding of educational phenomena. This is especially useful in HPE, where the complexity of human learning and professional practice often requires multiple perspectives. By emphasizing practical, flexible, and outcome-focused approaches, pragmatism can significantly enhance the effectiveness and relevance of health professions education, ultimately leading to better-prepared healthcare professionals and improved patient care.

The practical applications of systematic reviews (SRs) and scoping reviews (ScRs), such as influencing patient care and informing research, practice, and policy, underscore the importance of adopting a pragmatic approach. Pragmatism, as an epistemology, emphasizes practical outcomes and problem-solving, which is crucial in this context. By collecting and integrating both qualitative and quantitative data, researchers can achieve a comprehensive understanding of the research questions addressed by these reviews (Creswell & Plano Clark, 2018). Consequently, pragmatism provides the philosophical foundation and methodological flexibility needed to effectively conduct my study.

Knowledge synthesis, including SRs and ScRs, spans a continuum between objectivist (positivist) and subjectivist (constructivist) orientations (Norman, Sherbino & Varpio, 2022). SRs align with the objectivist tradition, while ScRs fit within the subjectivist tradition. Health

professions education (HPE) is a field without strict boundaries defining its theories and methodologies, making the breadth and diversity of knowledge syntheses essential. By embracing a pragmatic approach, HPE can benefit from a rich diversity of philosophies that inform its methods, enhancing the effectiveness and relevance of educational practices in improving patient care and advancing research, practice, and policy. This integration of diverse perspectives and methodologies is vital for addressing complex and multifaceted issues within HPE.

Ethical Considerations

I obtained approval for this study from the University of Ottawa Social Sciences and Humanities Research Ethics Board (see Appendix A). In addition, the ECME listserv provided access to their listserv for the study prior to participant recruitment (Appendix B). All oral and written communication with members of all listservs and interview participants detailed the purpose of the research and discussed anonymity, confidentiality, as well as the participants' right to withdraw from the study.

Summary

In this chapter, I provided an overview of the epistemological assumptions, research design, and ethical considerations fundamental to this study. I described the context in which the research was carried out and discussed my reflective positionality as a participant researcher in the study field. The two-part research design for my study was outlined: a two-phase sequential MMR design was used. In Phase 1, ECRs and librarians were surveyed on the barriers they encountered while conducting SRs and ScRs. Phase 2 consisted of interviews with a select number of ECRs and librarians regarding the barriers, followed by the facilitators experienced while doing these reviews. The next three chapters describe Phase 1 and Phase 2 of my thesis in greater detail, including the sample population, instrument development, data collection, analysis procedures and my findings.

Chapter 4: Early Career Researchers – Results for Phase 1 and Phase 2

This chapter describes the methods and results from Phase 1 and Phase 2 of my study with early career researchers (ECRs). Phase 1 included quantitative data collected from ECRs. The purpose of Phase I was to determine the barriers faced by ECRs in the disciplines of health professions when conducting SRs and ScRs. The purpose of Phase 2 was to determine the potential facilitators and solutions to overcoming the barriers and challenges that ECRs in health professions face when conducting SRs or ScRs, as well as determining how librarians can better support ECRs when conducting SRs and ScRs. This chapter presents the findings from the ECRs' survey, followed by the findings from the ECRs' interviews.

Early career researchers' survey

Sample

I surveyed two ECR groups in English and French. First, I surveyed ECRs on the Early Career Medical Educators (ECME) listserv, a Canadian community of engaged and collaborative scholars in medical education. I received permission to post my survey to this listserv (see Appendix B). I also surveyed ECRs on the Association for Medical Education in Europe (AMEE) listserv, the European counterpart to the ECME listserv. I emailed a total of 1524 ECRs the survey through the ECME and AMEE listservs.

Instrument development

I developed the survey for the ECR groups drawing from my literature review, as well as reviewing other surveys created for ECRs (Shepherd, 2013) and librarians (Nicholson, McCrillis, & Williams, 2017). The survey (see Appendix C for ECRs' survey in English, Appendix D for ECRs' survey in French) inquired about their roles in systematic and scoping reviews, barriers, and challenges, and how they overcame them. Table 2 presents a summary of the research questions for Phase 1 and the associated survey dimensions and questions.

Table 2 *Table of specifications for ECRs survey - Phase 1*

Research Questions	Dimension	Corresponding survey item numbers
To what extent do ECRs identify challenges or barriers when conducting SRs or ScRs?	• Frequency of ECRs' experience in conducting SRs or ScRs	• Questions 1 to 5
	• Nature of ECRs' experience in conducting SRs and ScRs	• Questions 6 and 7
	• Level of ECRs' expertise in conducting SRs or ScRs	• Questions 8, 10, 13, 15, 17 and 18
	• Nature of ECRs' challenges or barriers when conducting SRs or ScRs	• Questions 9, 11, 12, 14, 16 and 19
To what extent do ECRs identify opportunities (through training or involving a librarian) to address these challenges or barriers when conducting SRs or ScRs?	• Level of ECRs' opportunities identified (such as involving a librarian) to address challenges or barriers when conducting SRs or ScRs	• Question 20
	• Level of ECRs' opportunities identified (such as training) to address challenges or barriers when conducting SRs or ScRs	• Questions 21 to 24
	• Nature of ECRs' opportunities identified (such as training) to address challenges or barriers when conducting SRs or ScRs	• Questions 25 and 26

The survey for ECRs comprised of 35 questions, including screening questions to check the participants' eligibility to participate in the survey, demographics, and follow-up related questions. I added an "I don't know" option to minimize missing responses (Dillman, 2011). There were 18 single choice questions, 7 multiple-choice questions, and 10 open ended questions. I piloted the survey with two colleagues (ECRs), who did not participate in the study,

to ensure clarity, feasibility and comprehension, and revise, as needed (Seidman, 2013). Once finalized, I built the survey in SurveyMonkey, which was hosted on a Canadian server, ensuring that survey data were stored in Canada, subject to Canadian privacy laws. The survey took approximately 15 to 20 minutes to complete. I translated the final versions of the surveys into French (with verification from a first language French speaker), then piloted them with a minimum of two French ECRs for clarity and acceptability before being administered.

Data collection procedures

I emailed an information letter (see Appendix E for ECRs' letter of information in English, and Appendix F for ECRs letter of information in French) and the respective survey link to the eligible ECRs via the appropriate listservs. Returned surveys indicated consent to participate in Phase I of this study. I distributed the survey using a modified version of Dillman's (2011) Tailored Design Method to accommodate the online survey environment (Table 3).

Table 3 Modified Version of Dillman's Tailored Design Method (2011)

First Email	
Time point	Day 1
Contents	Email copy of participant information letter and provide a link to the survey
Second Email	
Time point	Day 14
Contents	Thank you email expressing appreciation for participating in the survey, indicate that if the survey has not yet been completed, I hope that it will be soon
Third Email	
Time point	Day 28
Contents	Redistribute survey link and participant information letter

I sent two reminders survey emails to all listservs (see Appendix G for ECRs' reminder survey email in English and Appendix H for ECRs' reminder survey email in French). The first

reminder email was sent two weeks following the initial survey distribution, and the second email reminder was sent two weeks following the first email reminder. The survey was open for 5 weeks in total. To recruit potential participants for Phase II, I asked survey respondents to indicate their interest in obtaining additional information and potentially participating in Phase 2. I provided remuneration to participants for completing the survey in the form of a draw to win one of four \$25 Starbucks gift cards.

Data analysis

For the ECR survey in Phase 1, I calculated descriptive statistics (e.g., percentages, frequencies) for the survey items such as demographics using SPSS. I conducted a directed content analysis on all open-ended response data (Hsieh & Shannon, 2005). According to Hsieh and Shannon (2005), the goal of a directed content analysis is “to validate or extend conceptually a theoretical framework or theory” (p. 1281). The existing theory can help focus on the research question, provide predictions about the relationships between variables, and help determine the initial coding scheme (Hsieh & Shannon, 2005). I conducted a directed content analysis that consisted of reviewing all open-ended responses word-by-word to generate codes. I used a combination of deductive and inductive coding; first, I developed a preliminary codebook based on my conceptual framework, research questions, and survey dimensions. I deductively coded all open-text responses using my codebook. I identified codes inductively through a second cycle of coding. I then generated frequencies of word use and combined codes into categories for further analysis (Hsieh & Shannon, 2005).

Findings

Characteristics of ECR respondents

I will provide an overview of the survey participants before discussing my findings by research question. A total of 58 out of 1524 (3.8%) ECR participants completed the survey in French or English. Due to the skip logic of the survey and the fact that not all participants answered every item, the number of responses for selected items is less than 58. The survey completion rate was 72%.

Among the 58 participants who responded to the survey, 32 (55.1%) completed the demographic section, located at the end of the survey. As depicted in Table 4 and Table 5, respondents worked in a variety of disciplines including medicine, nursing, and medical education / health professions education, and for a variety of employers including university or colleges, government or were self-employed.

Table 4 *Survey Respondents' Disciplines for ECRs in English and French (N = 32)*

Disciplines	n (%)
Medical education or health professions education	16 (50.0)
Medicine (including all subspecialties)	9 (28.1)
Nursing	3 (9.4)
Rehabilitation (i.e., occupational therapy, physical therapy, speech language pathology)	2 (6.3)
Dentistry	1 (3.2)
Other: Biostatistics	1 (3.2)

^a Of the 58 respondents who completed the survey, 32 respondents elected to answer this question.

Table 5 *Survey Respondents' (ECRs) Employers in English and French (N = 32)*

Employers	n (%)
University/College	23 (71.9)
Self-employed	3 (9.4)
Government/Agency	2 (6.3)
Not-for-profit agency	2 (6.3)
Other: Hospital	1 (3.2)
University Hospital Education Centre	1 (3.2)

^a Of the 58 respondents who completed the surveys, 32 respondents elected to answer this survey question.

Research Question 1: What are the barriers and challenges ECRs in health professions face when conducting SRs and ScRs?

Of the 58 ECR respondents that answered the question that they had completed or participated in a systematic review or a scoping review, 21 (36.2%) respondents indicated that

they had completed or participated in a systematic review, 12 (20.7%) respondents indicated they had completed or participated in a scoping review, 26 (44.8%) respondents indicated they had completed or participated in *both* a systematic review and scoping review, and 20 (34.5%) respondents indicated that they had never completed or participated in a systematic review or scoping review. If they had not completed a systematic or scoping review, they were removed from the survey at this point, thus 58 participants who fully completed the survey.

Systematic reviews

When asked how many SRs they had completed or participated in, 28 out of 58 respondents indicated they had completed 1-2 SRs (n = 19, 67.9%), 3-5 SRs (n = 8, 28.6%), or more than 6 SRs (n = 1, 3.6%). Of those who did complete or participate in SRs, there were different ways that respondents learned how to do SRs (see Table 6).

Table 6 *How Survey Respondents Learned to do Systematic Reviews (N = 31)*

How Systematic Reviews were Learned	n (%)
From other colleagues and mentors	24 (85.7)
Hands-on practice	20 (71.4)
Literature and written resources	18 (64.3)
Training courses and professional development	8 (28.6)
Applied my existing research skills	8 (28.6)
Academic course in university college	7 (25.0)
Supervising and teaching others	7 (25.0)
Other (e.g. Googling)	1 (3.5)

^a Of the 58 respondents who completed the survey, 31 respondents elected to answer this survey question.

As shown in Table 7, in response to a multiple-choice question, respondents noted a variety of methodological barriers to completing SRs. Other methodological barriers raised in the open-ended answers can be summarized into 4 main categories (Table 8). Respondents were also asked to identify strategies to handle these methodological barriers, which can be summarized into 5 main categories (Table 9). Furthermore, Table 10 also noted a variety of interpersonal barriers to completing SRs by ECRs. Other interpersonal barriers raised in the open-ended answers can be summarized into 5 main categories (Table 11).

Table 7 *Methodological barriers of systematic reviews*

Methodological barriers	n (%)						
	<i>N</i>	Never	Rarely	Often	Always	Not sure	N/A
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.	29	11 (37.9)	7 (24.1)	5 (17.2)	2 (6.9)	1 (3.4)	3 (10.3)
Researcher (or myself) did not have a protocol.	29	12 (41.4)	10 (34.5)	4 (13.8)	2 (6.9)	1 (3.4)	0 (0)
Researcher (or myself) did not have one clear answerable question.	29	8 (27.6)	14 (48.3)	5 (17.2)	2 (6.9)	0 (0)	0 (0)
Question was defined too broadly	29	1 (3.4)	9 (31.0)	18 (62.1)	1 (3.4)	0 (0)	0 (0)
Question was defined too narrowly.	29	11 (37.9)	14 (48.3)	3 (10.3)	-	1 (3.4)	0 (0)
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.	29	16 (55.2)	7 (24.1)	5 (17.2)	1 (3.4)	0 (0)	0 (0)
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).	29	13 (44.9)	7 (24.1)	6 (20.7)	2 (6.9)	1 (3.4)	0 (0)
Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	29	19 (65.5)	6 (20.7)	1 (3.4)	3 (10.3)	0 (0)	0 (0)
Researcher (or myself) was not using two screeners.	29	18 (62.1)	5 (17.2)	3 (10.3)	2 (6.9)	1 (3.4)	0 (0)
Researcher (or myself) was not tracking reasons for exclusion.	29	15 (51.7)	10 (34.5)	4 (13.8)	0 (0)	0 (0)	0 (0)
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	29	14 (48.3)	9 (31.0)	3 (10.3)	3 (10.3)	0 (0)	0 (0)
Researcher (or myself) did not have or follow a data extraction plan.	29	13 (44.8)	12 (41.4)	2 (6.9)	1 (3.4)	1 (3.4)	0 (0)

^a Of the 58 respondents who completed the survey, 29 respondents elected to answer this survey question.

Table 8 *ECRs open-ended answers to other SR methodological barriers*

Theme	Illustrative quotes
Challenges with searching	<p>“Developing the search strategy due to lack of appropriate MeSH terms, especially keywords that are related to Medical Education and Health Professions Education”.</p> <p>“Getting a good robust search strategy. Knowing which search engines to use”.</p> <p>“Limited support to define a comprehensive search strategy”.</p>
Challenges with critical appraisal	<p>“Lack of appropriate appraisal checklists especially when designs are heterogenous and non-specific”.</p>
Lack of understanding of proper methods	<p>“Associated content experts not familiar with methodology. Sometimes pushed for unreasonable conclusions”.</p> <p>“Lack of knowledge/skill on meta-analysis”.</p> <p>“PI decided on a systematic review when it wasn’t the best method for answering the research question however selected the method because of its high status in the hierarchy of evidence”.</p>
Time management	<p>“Time dedication due to other responsibilities. Amount of time passed during initial search through databases”.</p> <p>“Co-ordinating reviewing articles with other people’s timeframes – sometimes have found this takes a long time and extends the process”.</p>

Table 9 ECRs open-ended answers for strategies to overcome SR methodological barriers

Theme	Illustrative quotes
Librarian involvement	“Consult a librarian scientist when possible”.
Statistician involvement	“Collaborate with a library professional”. “Having a statistician on the team in case meta-analysis is needed”.
Time management	“Define short tasks and complete them at time previously defined”. “Trying to establish clear deadlines and be reasonable re: what busy academics can achieve with their schedules”.
Project management	“Having clear rules up front about how to deal with these situations. Spending a lot of time piloting my extraction sheet”. “PI/mentor and the librarian – also performed an unofficial narrative review so we could better understand the question we were trying to ask”.
Regular and open communication	“Open communication with screeners and regular meetings to discuss conflicts during screening. It’s time consuming but worth it”.

Table 10 *Interpersonal barriers of systematic reviews*

Interpersonal barriers	n (%)						
	<i>N</i>	Never	Rarely	Often	Always	Not sure	N/A
Research team could not agree on question.	29	13 (44.8)	10 (34.5)	5 (17.2)	1 (3.4)	0 (0)	0 (0)
A student was leading the project.	29	6 (20.7)	8 (27.6)	7 (24.1)	4 (13.8)	1 (3.4)	3 (10.3)
A student's faculty mentor was not helpful.	29	8 (27.6)	8 (27.6)	7 (24.1)	3 (10.3)	0 (0)	3 (10.3)
Researcher refused request for authorship (to librarian or another member of the team).	29	20 (69.0)	4 (13.8)	2 (6.9)	0 (0)	1 (3.4)	2 (6.9)
The research team had too many members.	29	11 (37.9)	8 (27.6)	6 (20.7)	2 (6.9)	1 (3.4)	1 (3.4)
The research team had too few members.	29	11 (37.9)	14 (48.3)	2 (6.9)	0 (0)	1 (3.4)	1 (3.4)
The research team was dysfunctional.	29	17 (58.6)	8 (27.6)	3 (10.3)	1 (3.4)	0 (0)	0 (0)
Researcher considered you only as a PDF supplier or provider of administrative tasks.	29	21 (72.4)	4 (13.8)	3 (10.3)	0 (0)	0 (0)	1 (3.4)
Researcher had unreasonable time expectations.	29	12 (41.4)	5 (17.2)	9 (31.0)	2 (6.9)	0 (0)	0 (0)
Research team cannot agree on search terms.	29	17 (58.6)	6 (20.7)	2 (6.9)	2 (6.9)	1 (3.4)	1 (3.4)
Communication issues between other research team members.	29	10 (34.5)	11 (37.9)	4 (13.8)	3 (10.3)	0 (0)	1 (3.4)

^a Of the 58 respondents who completed the surveys, 29 respondents elected to answer this survey question.

Table 21 ECRs open-ended answers to other SR interpersonal barriers

Theme	Illustrative quotes
Lack of organization/planning	“Coordinating meeting times can be a challenge with clinicians and busy investigators”.
Lack of availability and/or reliability of team members	“Certain members were less reliable, delayed the SR process and output”.
Authorship expectations	“Inconsistent timelines between research team members”.
Lack of support	“Certain individuals were unwilling to help with the data extraction and analysis but wanted to be part of the interpretation and publication portions of the project”.
ECRs not always taken seriously	“I found that there were often a lot of people included on the author’s list who really did not help much at all for the SR – definitely not ICJME criteria, but the culture was to include them anyway”.
Lack of support	“They assigned all of works to me. They did almost nothing”.
ECRs not always taken seriously	“Supervisor said one thing, did another, and smirked when I questioned why they flagged it as include/exclude. Those in power can easily sabotage a project and use it to wear down a subordinate”.
Lack of support	“... As a student myself, still I am not always taken seriously by some seniors, and my contributions to non-administrative parts of the review process were not always valued.”

Of the 29 respondents that answered the question if they had ever consulted with a librarian or information specialist when conducting a SR, 27 (93.1%) respondents indicated that they had consulted with a librarian, 1 (3.4%) respondent indicated that they had not consulted with a librarian, and 1 (3.4%) respondent indicated that they didn’t know.

When responding to the question if they had ever *taken* a training course for conducting a SR, 29 respondents answered this question. Of the 29 respondents, 12 answered ‘yes’ (41.4%), 16 answered ‘no’ (55.2%) and 1 answered ‘Not applicable’ (3.4%). When asked if they had ever *given* a training course for conducting a SR, 29 respondents answered the question. Of the 29 respondents, 4 replied ‘yes’ (13.8%) and 25 replied ‘no’ (86.2%).

Scoping reviews

When asked how many ScRs they had completed or participated in, 31 out of 58 respondents indicated they had completed 1-2 ScRs (n = 15, 48.4%), 3-5 ScRs (n = 4, 12.9%), 6-8 SRs (n = 2, 6.5%) or none (n = 10, 32.2%). Of those who did complete or participate in ScRs, there were different ways that respondents learned how to do ScRs (see Table 12).

Table 32 *How Survey Respondents Learned to do Scoping Reviews (N = 31)*

How Scoping Reviews were Learned	n (%)
From other colleagues and mentors	17 (54.8)
Hands-on practice	14 (45.1)
Literature and written resources	17 (54.8)
Training courses and professional development	7 (22.6)
Applied my existing research skills	10 (32.3)
Academic course in university college	4 (12.9)
Supervising and teaching others	7 (22.6)

^a Of the 58 respondents who completed the surveys, 31 respondents elected to answer this survey question.

As shown in Table 132, in response to a multiple-choice question, respondents noted a variety of methodological barriers to completing ScRs. Other methodological barriers raised in the open-ended answers can be summarized into 3 main categories (Table 14). Respondents were also asked to identify strategies to handle these methodological barriers, which can be summarized into 3 main categories (Table 15). Furthermore, Table 16 also noted a variety of interpersonal barriers to completing ScRs by ECRs. Other interpersonal barriers raised in the open-ended answers can be summarized into 4 main categories (Table 17).

Table 43 *Methodological barriers of scoping reviews*

Methodological barriers	n (%)						
	<i>N</i>	Never	Rarely	Often	Always	Not sure	N/A
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.	28	7 (25.0)	7 (25.0)	5 (17.9)	0 (0)	0 (0)	9 (32.1)
Researcher (or myself) did not have a protocol.	28	5 (17.9)	7 (25.0)	4 (14.3)	1 (3.6)	2 (7.1)	9 (32.1)
Researcher (or myself) did not have one clear answerable question.	28	7 (25.0)	6 (21.4)	5 (17.9)	1 (3.6)	0 (0)	9 (32.1)
Question was defined too broadly	28	5 (17.9)	6 (21.4)	6 (21.4)	1 (3.6)	2 (7.1)	8 (28.6)
Question was defined too narrowly.	28	10 (35.7)	8 (28.6)	2 (7.1)	0 (0)	0 (0)	8 (28.6)
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.	28	10 (35.7)	7 (25.0)	2 (7.1)	1 (3.6)	0 (0)	8 (28.6)
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).	28	8 (28.6)	7 (25.0)	3 (10.7)	1 (3.6)	1 (3.6)	8 (28.6)
Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	28	14 (50.0)	4 (14.3)	1 (3.6)	1 (3.6)	0 (0)	8 (28.6)
Researcher (or myself) was not using two screeners.	28	9 (32.1)	7 (25.0)	3 (10.7)	0 (0)	0 (0)	9 (32.1)
Researcher (or myself) was not tracking reasons for exclusion.	28	10 (35.7)	3 (10.7)	4 (14.3)	1 (3.6)	2 (7.1)	8 (28.6)
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	28	6 (21.4)	2 (7.1)	8 (28.6)	1 (3.6)	1 (3.6)	10 (35.7)
Researcher (or myself) did not have or follow a data extraction plan.	28	12 (42.9)	4 (14.3)	3 (10.7)	1 (3.6)	0 (0)	8 (28.6)

^a Of the 58 respondents who completed the surveys, 28 respondents elected to answer this survey question.

Table 54 ECRs open-ended answers to other ScR methodological barriers

Theme	Illustrative quotes
Challenges with searching	“Defining a clear search strategy”. “When conducting a scoping review, usually the concepts of the team members are not aligned ...”.
Lack of experience	“I would say that the biggest challenge for me is my lack of experience in conducting scoping reviews, which makes the methodological process blurry for me when helping extract data for scoping review”.
Lack of understanding of proper methods	“Lack of understanding of the goals and process of a scoping review”.

Table 65 *ECRs open-ended answers for strategies to overcome ScR methodological barriers*

Theme	Illustrative quotes
Librarian involvement	“Harassed librarian until they agreed to help!”. “Consult with a library scientist when possible”.
Project management	“Developing strong inclusion/exclusion criteria at the onset of the project and communicating them well with colleagues”. “Use of software – Covidence for screening”.
Mentorship from colleagues / mentors	“Greater engagement with the literature on scoping reviews, seeking out information from colleagues / mentors”.

Table 76 *Interpersonal barriers of scoping reviews*

Interpersonal barriers	n (%)						
	<i>N</i>	Never	Rarely	Often	Always	Not sure	N/A
Research team could not agree on question.	27	12 (44.4)	6 (21.4)	1 (3.7)	1 (3.7)	0 (0)	7 (25.9)
A student was leading the project.	27	12 (44.4)	4 (14.3)	3 (11.1)	1 (3.7)	0 (0)	7 (25.9)
A student's faculty mentor was not helpful.	27	13 (48.1)	5 (18.5)	1 (3.7)	0 (0)	0 (0)	8 (29.6)
Researcher refused request for authorship (to librarian or another member of the team).	27	10 (37.0)	5 (18.5)	2 (7.4)	2 (7.4)	1 (3.7)	7 (25.9)
The research team had too many members.	27	10 (37.0)	5 (18.5)	2 (7.4)	2 (7.4)	1 (3.7)	7 (25.9)
The research team had too few members.	27	11 (40.7)	5 (18.5)	3 (11.1)	0 (0)	1 (3.7)	1 (3.7)
The research team was dysfunctional.	27	10 (37.0)	8 (29.6)	2 (7.4)	0 (0)	0 (0)	7 (25.9)
Researcher considered you only as a PDF supplier or provider of administrative tasks.	27	14 (51.8)	4 (14.8)	2 (7.4)	0 (0)	0 (0)	7 (25.9)
Researcher had unreasonable time expectations.	27	8 (29.6)	4 (14.8)	6 (21.4)	2 (7.4)	0 (0)	7 (25.9)
Research team cannot agree on search terms.	27	10 (37.0)	8 (29.6)	0 (0)	0 (0)	1 (3.7)	8 (29.6)
Communication issues between other research team members.	27	9 (33.3)	7 (25.9)	4 (14.8)	0 (0)	0 (0)	7 (25.9)

^a Of the 58 respondents who completed the surveys, 27 respondents elected to answer this survey question.

Table 87 ECRs open-ended answers to other ScR interpersonal barriers

Theme	Illustrative quotes
Lack of support	“Adequate support was the largest issue for me as a student. I don’t think my supervisors were familiar with this method, and I received little to no guidance on what I was doing”.
Lack of availability and/or reliability of team members	“Availability of team members – not making a firm commitment”. “Competing priorities to get the project finished”.
Authorship expectations	“Sluggish senior faculty members who want their name on the paper but doesn’t want to contribute to the teamwork”.
Time management	“Time expectations mismatch between members of the team, I.e. a senior author thinking screening would take a few weeks, while junior authors (myself included) were overwhelmed trying to complete screening so quickly”.

Of the 27 respondents that answered the question if they had ever consulted with a librarian or information specialist when conducting a ScR, 18 (66.6%) respondents indicated that they had consulted with a librarian, 8 (29.6%) respondents indicated that they had not consulted with a librarian, and 1 (3.7%) respondent indicated that they didn’t know.

When responding to the question if they had ever *taken* a training course for conducting a ScR, 29 respondents answered this question. Of the 29 respondents, 3 answered ‘yes’ (10.3%), 22 answered ‘no’ (75.9%) and 4 answered ‘Not applicable’ (13.8%). When asked if they had ever *given* a training course for conducting a ScR, 31 respondents answered the question. Of the 31 respondents, 3 replied ‘yes’ (9.7%), 27 replied ‘no’ (87.1%) and 1 replied ‘I don’t know’ (3.2%). When asked what barriers were encountered when instructing a ScR workshop/course, respondents stated that cost, time and helping participants develop a strong research question were challenges.

Summary for ECRs Phase 1

Overall, 58 ECRs in HPE participated in Phase 1 of this study. Their responses suggest that the largest methodological barriers for systematic reviews include challenges in searching, challenges with critical appraisal, a lack of understanding of proper methods, and time management. Strategies to overcome these barriers identified by ECRs have included librarian

involvement, statistician involvement, time management, project management, and regular and open communication. Interpersonal barriers identified by ECRs conducting SRs included a lack of organization, lack of availability and/or reliability of team members, authorship expectations, lack of support, and that ECRs are not always taken seriously.

The survey found similar methodological barriers with ScRs including challenges in searching, lack of experience in doing ScRs (more so than SRs), and a lack of understanding of proper ScR methods. Strategies to overcome these barriers include librarian involvement, project management, and proper mentorship. Interpersonal barriers identified by ECRs conducting ScRs included a lack of support from supervisors or mentors, lack of availability and/or reliability of team members, managing authorship expectations, and lack of time management.

The next section describes Phase 2 of this study, where I explored the potential facilitators and solutions to overcoming the barriers and challenges that ECRs in health professions face when conducting SRs or ScRs, as well as determining how librarians can better support ECRs when conducting SRs and ScRs.

Phase 2 – Interviews

The purpose of Phase 2 was to expand upon the data collected from both surveys by conducting qualitative semi-structured interviews with a selected group of ECRs who have published at least one SR or ScR. Based upon Phase I, the interviews expanded on the identified barriers from the survey and examined potential facilitators and solutions that ECRs use to overcome the identified barriers, as well as strategies librarians can develop to help ECRs overcome these barriers. The following research questions guided this phase:

1. What are the barriers ECRs in health professions face when conducting and instructing how to do SRs and ScRs?
2. What are potential facilitators and solutions to overcoming the identified barriers that ECRs in health professions face when conducting SRs or ScRs?
3. According to ECRs, how can librarians better support ECRs when conducting SRs and ScRs?

Sample

I used criterion-based sampling to identify and recruit ECRs who completed the survey in Phase 1. I contacted through email the 14 ECRs who indicated interest in participating in an interview, and all 14 respondents replied to my email and agreed to participate in an interview. ECRs who reported strategies identified to better support early career learners when conducting these reviews were selected first, over those who provided no response, on a first come, first interviewed basis.

Instrument development

I used the findings from Phase 1, as well as the above-mentioned literature review, to inform the development of my semi-structured interview guide for Phase 2 (See Appendix I for English guide, see Appendix J for French guide). Table 18 presents the research questions for Phase 2 and the corresponding dimensions and questions included in the guides. I developed the guide for ECRs who reported barriers and challenges when conducting SRs and ScRs, as well as facilitators and solutions that ECRS utilized when conducting these reviews. I developed an introductory script that consists of several open-ended questions, including additional probes to allow for expansion. There were 4 questions included in the guide. I piloted the interview

questions with two ECR colleagues to ensure clarity, feasibility, and comprehension, and revised as needed (Seidman, 2013). I wanted to ensure that I did not miss any relevant questions or probes, and that they were clearly worded. I translated the final versions of the guides into French (with verification from a natural French speaker), then piloted the guides with a minimum of two French ECRs for clarity and acceptability before being administered.

Table 98 *Table of specifications for Phase 2 interviews*

Research Questions	Dimension	Corresponding interview numbers
To what extent do ECRs identify barriers when conducting SRs or ScRs?	<ul style="list-style-type: none"> • Nature of ECRs’ barriers when conducting SRs or ScRs 	Question 1
To what extent do ECRs identify facilitators when conducting SRs or ScRs?	<ul style="list-style-type: none"> • Nature of ECRs’ facilitators when conducting SRs or ScRs 	Question 2
What solutions did ECRs identify to address how librarians can better support them when conducting SRs or ScRs?	<ul style="list-style-type: none"> • Level of ECRs’ solutions identified to address how librarians can better support them when conducting SRs or ScRs 	Questions 2,3

Data collection procedures

I contacted participants who responded and indicated interest in participating in an interview in Phase 1 via email and provided them with a letter of information and consent form (see Appendix K for ECRs’ letter of information in English and Appendix L in French, and Appendix M for ECRs’ consent form in English and Appendix N in French), inviting them to participate in an interview for Phase 2. Each interview took place during a time that is convenient for the interviewee. Interviews took place virtually, lasting approximately 30 minutes to one hour. All interviewees signed and emailed an informed consent to me before starting the interview. Each interview was audio-recorded and transcribed using Otter.ai, and then I listened to each interview again to clean up the transcription to ensure accuracy for the wording. I

provided remuneration to participants for completing the interview in the form of a draw to win one of four \$25 Starbucks gift cards.

Data analysis

For the interviews, I followed the systematic and iterative approach put forth by Miles, Huberman, and Saldana (2014) that generates meaning from data and testing and confirming findings. The use of data displays to first organize the data is encouraged by these authors, to better explore, describe, order, explain and predict the data. Following the guidance provided by Miles et al. (2014), I created a provisional list of *a priori* researcher-generated codes, I tracked categories based on the questions asked in the interview guide, as well as the survey as I wanted to further investigate the nuances regarding barriers (see Table 19). I did this initial step using MAXQDA software (<https://www.maxqda.com/>) to track and record my analytic process. Second, I thoroughly read each transcript to understand the data in a general sense. Third, I re-read each transcript a third time and began making notes referencing a category. I recognized those categories from the initial coding system and added notations to reference new or refined codes. Fourth, I then refined the coding system again, using deductive and inductive coding to generate a list of comprehensive codes, using a process of pattern coding (Miles et al., 2014). Following the guidance of Patton (2014), I have decided against reporting the number of respondents who reported each category to not detract from the content of what the interviewees said. Additionally, I have provided only quotes that embody the refined codes, rather than reporting all quotations collected from interviewees in order to provide a “verbal display that represents and presents data vividly about the study’s phenomenon of interest” (Miles, Huberman, & Saldana, 2020, p. 324).

Table 109 Overview of Phase 2 categories and codes

Category	Codes
Barriers to ECRs conducting SRs and ScRs	<ul style="list-style-type: none"> • Lack of dedicated time allotted for reviews • Lack of understanding the proper review methods • Inadequate resources hindering the successful completion of a review.
Facilitators to ECRs conducting SRs and ScRs	<ul style="list-style-type: none"> • Sufficient resources facilitating the successful completion of a review • A strong team characterized by robust organization and cohesion
Solutions for librarians to better support ECRs conducting SRs and ScRs	<ul style="list-style-type: none"> • Teaching ECRs about appropriate methods for conducting reviews • Clarifying the librarian's role to the researcher • Enhancing outreach and promotional approaches.

Trustworthiness

The findings from the surveys (Part 1) and interviews (Part 2) of this study were triangulated with each other to ensure credibility, dependability, and confirmability (Lincoln & Guba, 1985). Throughout both parts of the study, I used memo writing to document the experiences, assumptions, decisions, processes, and actions taken while interpreting the data. By providing a rich description of memo writing, as well as an audit trail, the trustworthiness of the study is further strengthened by the transferability to other contexts and the dependability of consistent findings that could be repeated (Lincoln & Guba, 1985). I also engaged in peer debriefing with my thesis supervisor throughout Phase 2.

Findings

Characteristics of the interviewees

Fourteen ECRs participated in Phase 2 of the present study, 14 in English and 0 in French. Of the 14 participants that I interviewed, 9 (64.2%) indicated they worked in an

academic institution, 2 (14.2%) worked in a hospital setting, and 3 (21.4%) worked for community health agencies. Other demographic information was not collected, as the health professions community is small, and confidentiality needed to be maintained.

Research Question 1: What are the barriers ECRs in health professions face when conducting SRs and ScRs?

In the sections that follow, I will describe the barriers that ECRs in health professions encounter when conducting SRs and ScRs. The barriers to conducting SRs and ScRs included: a) Lack of dedicated time allotted for reviews; b) Lack of understanding the proper review methods, and; c) Inadequate resources hindering the successful completion of a review.

Lack of dedicated time allotted for reviews

The interviewees indicated that a lack of dedicated time allotted for reviews was one of their biggest challenges. For example, an interviewee mentioned that a “significant obstacle lies in the constraint of time, a challenge that has remained consistent throughout [their] career” (Participant 1). Another participant indicated that, as with any review process, “there’s a considerable amount of grunt work involved, such as gathering PDFs, scrutinizing titles and abstracts, followed by multiple rounds of extraction ... therefore, [it’s important to emphasize] the allocation of sufficient time for each step to ensure a thoughtful approach” (Participant 2). Other interviewees highlighted that crafting a well-designed search strategy, devising efficient extraction methods, and allocating sufficient time for synthesizing findings were also time-consuming aspects of the review process. A participant described time as being “indispensable at every stage of the process to achieve thoroughness and quality” (Participant 1).

The interviewees also suggested that another time-related challenge is adhering to the established timelines of the review. A participant remarked that team dynamics can be “a significant burden on individuals within the team, particularly those engaged in abstract reviews and the decision-making process regarding progression” (Participant 4). Another participant indicated that if a team member “has completed their review significantly earlier and subsequently forgets crucial details ... [this] not only impacts project timelines but also compromises rigour since decisions may then be based on incomplete information” (Participant 10). Some participants implied that, in such circumstances, researchers are compelled to resort to making educated guesses, as revisiting all the work may not always be viable.

Another time-related issue highlighted by interviewees was the duration spent attempting to publish the reviews. As a participant expressed: “One notable time-related concern is the pressure to publish swiftly, as many journals require the search strategy to be no more than a year old. Consequently, there's a rush from conducting the review, extracting data, to the eventual need to rerun the search, integrate new findings, and adjust discussions accordingly” (Participant 8). Another participant remarked that the “the collaborative nature of working within a team sometimes results in waiting for teammates to respond [for publication purposes], posing [another] potential hindrance” (Participant 9). This challenge of publishing within a set timeframe can prove particularly difficult when students participate in the reviews. A participant observed that there is a trend “where students were tasked with conducting scoping or systematic reviews within a four-month timeframe, spanning just the duration of the summer” (Participant 1). Another participant commented that researchers “may tend to be overly ambitious in setting their goals [for their review]” (Participant 8) as without dedicating additional time beyond the summer period, it would be challenging to complete such projects within such a limited timeframe. This challenge similarly applies to students who have integrated systematic reviews into their theses. A participant suggested that one way to mitigate this challenge includes “adopting a manuscript-based thesis format to streamline the transition without the need for extensive reformatting” (Participant 4). Nonetheless, the passage of time remains a significant factor, as deadlines approach rapidly.

Lack of understanding the proper review methods

The interviewees pointed out that a lack of understanding of the appropriate review methods was among their most significant challenges. For example, participants commented that the formulation of a research question can pose difficulties. A participant mentioned that “while it might seem intuitive to enter [directly] into research with a question in mind, in practice, refining the question's wording can significantly influence the entire project's direction ... as it requires a solid foundation in existing literature to craft the question appropriately. As you delve into the literature, you might find that some aspects of your question are partially addressed, leading to further refinement” (Participant 11). Participants also noted that challenges arise when determining the appropriate amount of information to include in reviews, as finding the balance between thoroughness and overwhelm can be tricky. An interviewee remarked that when

“formulating the [research] question, the primary concern is always whether the scope is sufficient” (Participant 9). Another participant stated: “I often have to ask the question: Is it too broad or too narrow? A huge challenge [for me] lies in determining the appropriate scope for the question” (Participant 10).

Another obstacle that participants noted was their limited comprehension of the distinction between a systematic review and a scoping review. A participant remarked that as they “began [their] journey as a master’s student, [they] grappled with pinpointing the precise steps of a scoping review [compared to a systematic review], distinguishing it from other review types, and understanding how to effectively report it” (Participant 4). In some cases, participants indicated that they may initially intend to conduct a systematic review, but upon closer examination, realize that the question isn't well-suited for this methodology, or the available evidence may not adequately support it. Likewise, with scoping reviews, they also mentioned that it can prove challenging to precisely formulate the question in a manner that avoids generating an excessive number of search results while also preventing it from being too narrow, leading to limited findings. An interviewee observed that “a systematic review might be chosen when a scoping review would be more suitable. However, this decision often reflects the hierarchy of evidence, where systematic reviews and their quantitative aspects are esteemed more highly” (Participant 2). Other participants also mentioned that they noticed a trend within the research community of health professions that there's a perception that systematic reviews are sometimes employed inappropriately to address questions that could be better tackled using a different review type. An interviewee stated that “there's a prevalent closed-mindedness regarding systematic reviews being perceived as the gold standard, with some insisting that only this type of review should be pursued. However, conducting a systematic review isn't always appropriate for every topic or state of the literature” (Participant 8). Some participants remarked that this mindset has prompted inquiries from reviewers or within their academic or organizational circles about why a systematic review wasn't undertaken. They stressed the significance of articulating how the project's rationale and the current state of literature informed their approach to these audiences. Furthermore, they also observed a diminished appreciation for conducting scoping reviews, with certain researchers questioning why another form of empirical study wasn't pursued instead. A participant remarked that “the nature of work in medical education doesn't naturally align with the requirements of a systematic review” (Participant 11).

Participants also highlighted the difficulty they faced in conducting the literature review, particularly when it involved searching databases. An interviewee noted that they found “the literature search itself to be the most challenging aspect. It represents a practical component integral to implementing a step-by-step methodology” (Participant 13). Another interviewee stated that “finding resources to refine research questions is, in my opinion, the most challenging step. It involves seeking tips and tricks for screening, reviewing, and ultimately conducting the scoping review ... [but this cannot be done without] refining research questions and navigating the literature search—deciding how to phrase terms— [which has] proved to be the most arduous task [for me]” (Participant 3). Many participants indicated that they had not received training in systematically executing searches, such as those required for literature reviews in articles, papers, or theses. They also remarked that identifying databases and navigating them was particularly daunting, requiring specialized expertise and guidance to properly guide them. Some interviewees stated that sometimes the lack of expertise with ECRs in the specific subject matter of the task, not only the methods. Early career learners may overlook important nuances or details due to their unfamiliarity with the field. This can result in a loss of depth and richness in the extraction process. A participant stated that “simply pulling in a research assistant or an ECR who isn't well-versed in the subject matter may not yield the desired results” (Participant 10). Participants observed that many scoping reviews and systematic reviews are currently being undertaken, especially within graduate programs, where graduate students are heavily involved. And while these students may excel in theoretical aspects and writing, they may not always engage in the meticulous groundwork required for conducting reviews.

Participants also emphasized how the power dynamics between established researchers and early-career learners have presented an obstacle to gaining a deeper understanding of appropriate review methods. For example, some participants mentioned that they have limited access to resources and opportunities compared to their more established counterparts. They also experienced diminished confidence in voicing their opinions or questioning established researchers' viewpoints, partly due to the limited opportunities available to them. A participant stated that “this power dynamic has sometimes led to challenges for [me], such as feeling undervalued in research projects” (Participant 10). Other participants felt that they had limited autonomy in decision-making processes and faced barriers in their career advancement.

Inadequate resources hindering the successful completion of a review

Interviewees pointed out that another barrier is the lack of adequate resources for completing a successful review. For example, a participant remarked one challenge they've "encountered ... is assembling a team of diligent workers" (Participant 8). Collaborative efforts were deemed essential for conducting reviews, yet participants noted the challenges faced by junior or early career researchers in ensuring project continuity and timely completion of tasks amidst busy schedules. An interviewee explained that "ensuring that the project stays on track [can become] quite daunting" (Participant 13). Participants noted that it is often junior or mid-career faculty members who provide continuity for organizing these reviews. However, turnover among research personnel, primarily comprised of trainees, posed a significant challenge in systematic and scoping reviews. A participant stated that "as years pass, residents transition through training programs, leading to fluctuations in team composition. This attrition often results in a loss of momentum and can cause projects to stagnate or fail altogether" (Participant 3).

While collaboration enhances the quality of work, interviewees also acknowledged the considerable time investment required for effective collaboration. A participant pointed out that while the "collaboration yields valuable insights and enhances the quality of work, the practical aspect emphasizes the considerable time investment required" (Participant 11). Additionally, some interviewees mentioned the challenges of engaging in extensive collaboration with supervisors due to their busy schedules and numerous commitments. Balancing the desire to maximize supervisors' expertise with respecting their time constraints presented another obstacle. A participant noted that "without a steadfast principal investigator to maintain tight timelines and keep the team focused, the time constraints imposed by trainees' schedules can impede progress" (Participant 12).

Several participants noted that achieving equitable contributions in conducting reviews can be challenging at times, even when the review team is sizable and highly motivated. An interviewee stated that some team members may only screen a few titles and abstracts, yet "due to cultural norms of inclusivity in authorship, they are still included in manuscripts, resulting in inflated author lists" (Participant 3). According to participants, this imbalance creates tension regarding recognition based on contributions versus seniority.

Several participants highlighted that not being affiliated with an academic institution created a barrier, especially in terms of lacking access to library resources. For example, a participant commented that their “motivation for applying to be an adjunct professor wasn't primarily driven by a desire to undertake specific tasks. Rather, it was fueled by the prospect of ongoing access to the library, as [they] were eager to continue [their] community research endeavors” (Participant 8). Another interviewee mentioned that they had transitioned from academic to the private sector with no regrets “except for the challenge of accessing resources and a librarian” (Participant 14). By leaving academia, this participant “realized how reliant [they] had been on these resources in academia and how spoiled [they] had become without realizing it ... and now, one of [their] main challenges is the lack of access to essential resources” (Participant 14). These participants mentioned that the process of negotiating with a salesperson for a one-month trial period to conduct all of their searches resulted in additional time and expenses being incurred in their review process.

Similarly, the absence of an affiliation with an academic institution has resulted in a distinct lack of mentorship for some of the participants. An interviewee remarked that conducting a review becomes particularly daunting "without the support of a librarian or ... guidance from colleagues who have undergone similar processes" (Participant 8). In academic settings, researchers often have access to experienced mentors who can provide guidance throughout the review process, offering insights on search strategies, data analysis, and interpretation of findings. However, as several participants mentioned, for individuals without ties to academia, such mentorship opportunities may be limited or entirely absent. Without access to experienced mentors, these individuals may face challenges in designing and conducting their reviews effectively. They may struggle to develop comprehensive search strategies, identify relevant literature, and interpret findings accurately. Some participants found the absence of access to a community of practice for reviews, where they could seek guidance, pose questions, and receive assistance to be problematic. They stated that such a community would be especially beneficial for individuals who are no longer affiliated with academia, given that research tends to be concentrated within university settings due to established structures.

Question 2 - What are potential facilitators and solutions to overcoming the barriers that ECRs in health professions face when conducting SRs or ScRs?

In the following sections, I will describe the facilitators to overcoming barriers that ECRs in health professions encounter when conducting SRs and ScRs. The facilitators included: a) Sufficient resources facilitating the successful completion of a review; and b) A strong team characterized by robust organization and cohesion.

Sufficient resources facilitating the successful completion of a review

Participants identified that having sufficient resources has helped with facilitating the successful completion of a review. For instance, numerous participants remarked that technological advancements have significantly enhanced their review processes. An interviewee commented that “initially, when [they] began, [they] relied heavily on spreadsheets and folders to organize [their] work, but over time, [they] found it much easier to stay organized with tools specifically designed for this purpose” (Participant 7). Participants used a combination of tools including citation managers and systematic review software such as Rayyan, Covidence and Distiller, and “while there is a learning curve associated with these tools, and [none] of them [are] perfect, [participants] often found it beneficial to combine different platforms to suit [their] needs” (Participant 8). Interviewees stated that despite their individual quirks, these tools have undeniably streamlined their workflow.

Another facilitator highlighted by participants as conducive to the review process involved ensuring that all team members received comprehensive training and instruction beforehand. Nearly all participants commented that, in many cases, teams are comprised of members with diverse expertise: one may excel in content knowledge, another in methodology, and yet another in theory. It is therefore essential that each team member grasp the entirety of the review process, from searching to quality appraisal. This comprehensive understanding ensures active engagement from all team members throughout the review. A participant noted that they underwent “training during [their] PhD and in the early stages of [their] career to continually refine [their] skills and stay updated on evolving expectations for reviews” (Participant 6). Similarly, several participants noted that their colleagues engaged in review projects have undergone similar training, ensuring a shared understanding within the research team. These resources included access to knowledgeable librarians, recorded presentations, key literature, and mentorship to support their development. They shared that by fostering a collective

understanding through foundational training, their teams were better equipped to conduct successful reviews.

Along similar lines, interviewees also noted that staying informed about recent guidelines and utilizing specific resources for reviews has proven highly beneficial in comprehending the review process. An interviewee commented that “discovering those pivotal papers and identifying the resources that resonate with you such as the Cochrane Library, JBI handbook or PRISMA extensions, ... they all aided in navigating the pathway, and that proved crucial for me” (Participant 11). Another participant shared that when they were a master’s student, they “struggled to identify exactly the steps of a scoping review and how it differs from other types of reviews, and how to report it” (Participant 1). This participant expressed a desire for earlier access to specific resources, which they believe would have eased the process for them.

Participants mentioned that another factor facilitating the review process was the establishment of clear expectations from the outset. For example, a participant stated that “the more frequent and streamlined the communication, the better” (Participant 3). Other interviewees highlighted the effectiveness of holding regular meetings and setting deadlines to maintain accountability among team members, as well as facilitating a more streamlined process. Additionally, several participants noted that setting expectations for individual researchers regarding their contributions, such as the number of titles and abstracts to be screened, helped distribute the workload evenly and prevented one person from bearing too much burden. They commented that it was important to ensure that everyone was actively contributing to the work. A few participants also emphasized the importance of establishing clear authorship guidelines from the outset, which should encompass adherence to the International Committee of Medical Journal Editors (ICMJE) criteria for authorship. They remarked that there were instances where researchers, particularly graduate students collaborating with their supervisors, were granted authorship without meeting the required criteria. In some cases, a supervisor invited another researcher to be an author without their contribution to the work. A participant shared that they had a “detailed document outlining data usage, authorship determination, and student roles. Although comprehensive, it's beneficial for larger team projects, especially in scoping reviews with numerous authors” (Participant 1). Participants agreed that clarity regarding authorship contributions from the beginning was consistently valued.

Multiple participants highlighted the advantages of increased the availability of funding opportunities, particularly given the limited funding landscape in health professions education. A participant commented that “systematic reviews or scoping reviews rarely receive funding opportunities, [as those] funds are typically allocated for original projects or papers” (Participant 14). However, several participants noted that funding opportunities are becoming available for health professions education such as “the opportunity to receive funding from a society called SDRME, which stands for the Society of Directors of Medical Education. They offer some funding specifically for systematic knowledge synthesis, such as systematic reviews, which was very helpful” (Participant 4). Participants indicated that although the amount was not significant, they considered themselves fortunate to have received these funds for their projects. The funding helped cover various expenses, including hiring a research assistant and acquiring essential software.

A strong team characterized by robust organization and cohesion

Participants highlighted that the effective completion of a review was largely influenced by a well-structured research team consisting of competent members who worked together cohesively. A participant stated that they learned early in their career that the “composition of the team, the categorizing [of each] member into subject matter experts, methods experts, and individuals who can assist with the more labor-intensive tasks is essential [for success]” (Participant 8). Another participant noted that they learned from a mentor that when they encountered a review that was unfamiliar to them, with “its uncommon nature and intricate methodology, they made a deliberate effort to seek out experts in the field or at ease with its complexities” (Participant 10). Many interviewees mentioned that they “strive to include members with expertise in content, methodology, and organizational aspects, alongside librarians who bring valuable searching skills to the team” (Participant 4). Furthermore, they strived to offer valuable learning opportunities to other early career researchers who may not have as much experience, all while recognizing their diligence and commitment.

Several participants stressed the significance of clearly delineating roles within the research team. For example, a participant stated that “one practice [they] consistently follow from the beginning is discussing authorship, clarifying each person's role in the project and their position in the authorship list” (Participant 1). Depending on the role a team member plays, determining where they fit in the authorship sequence and which team members will be included

as authors is crucial. Another interviewee commented that they have “witnessed situations where a student completes part of the search, then moves on, and it becomes unclear whether they should be listed as an author” (Participant 3). Additionally, participants stated that defining specific roles within the team, such as the scope of responsibilities for a librarian or the faculty member's role in supporting their work, is valuable. An interviewee shared that “there's been a real appreciation for the various strengths that team members bring. And when [a research team] take a strength based approach, [everyone] wins, in terms of working through the process” (Participant 9). These conversations help ensure clarity and cohesion within the team. A participant pointed out that this is especially crucial when joining a project midway, it can be challenging to discern what aspects of the methods are open to critique. They remarked that “as a co-author, [they are] mindful not to disrupt the harmony of the team excessively, as [their] role is to provide advice from a different standpoint” (Participant 12). Therefore, clarifying role responsibilities becomes crucial.

Multiple participants emphasized the significance of cohesion within the research team. They observed that their team members, although not identical in background, shared interests in the same general topic area. That common ground fostered cohesion among the team. For example, a participant commented that “while some of team members excelled in review methods or possessed more experience, the entire team had a foundational understanding within the field of medical education research and a general grasp of the existing literature” (Participant 6). Consequently, discrepancies in judgment, such as inclusion or exclusion criteria, or discussions about quality assessment, have been typically resolved through straightforward discussions. Another interviewee noted that “while alignment isn't constant, the ability to collaborate and navigate differences of opinion prevails” (Participant 2). A participant remarked that ensuring “the presence of an additional team member to address any differences of opinion ... has been successful. This success could be attributed to the critical importance of team composition” (Participant 13).

Question 3 - According to ECRs, how can librarians better support ECRs when conducting SRs and ScRs?

In the following sections, I will describe how librarians can better support ECRs when conducting SRs and ScRs. The strategies included: a) Teaching ECRs about appropriate methods

for conducting reviews; b) Clarifying the librarian's role to the researcher, and; c) Enhancing outreach and promotional approaches.

Teaching ECRs about appropriate methods for conducting reviews

Several participants expressed that providing instruction to early career learners on suitable review methodologies proved to be immensely advantageous. For example, an interviewee remarked that “proficient librarians played a crucial role in helping [them] refine their research question” (Participant 9). The participant also emphasized that librarians possess the essential expertise to skillfully address research questions, guaranteeing a focused inquiry. Another interviewee stated that they “encountered difficulties in determining the appropriate search terms and strategies for navigating databases due to the broad nature of the topic. The librarian's expertise proved invaluable in this regard, aiding [them] in effectively locating the desired data” (Participant 2). Another participant shared that it has been “beneficial to sit down with a librarian to explore search strategies together. Understanding how minor adjustments impact search results—whether increasing hits or refining study types—has enhanced [their] overall process, as the exploratory meeting was enlightening” (Participant 6). A participant also noted that librarians “possessed extensive experience in conducting searches across various fields and are well-versed in the intricacies of different databases, including which ones to utilize. This expertise is particularly beneficial as [they] tended to rely on a limited set of databases that [they] used consistently throughout [their] career” (Participant 10). Several participants expressed that having someone who can offer insights such as identifying databases with specific focuses or warning against those that may not yield relevant results was incredibly helpful.

Other participants noted that a librarian's contributions extend beyond mere retrieval tasks, engaging in collaborative discussions to refine search parameters and offer guidance on source types and search limitations. They also stated that a librarian's support spans multiple facets of the research process, encompassing query refinement, source organization, and ongoing assistance in navigating information landscapes. An interviewee explained that “However, it requires [a librarian] with a well-grounded expertise and skill set to effectively collaborate with a team ... guiding [them through the] processes, decision-making, and methodologies” (Participant 7). Numerous participants emphasized that this skill is unquestionably essential in guaranteeing

the production of high-quality reviews that make significant contributions to the literature. A participant highlighted that “this multifaceted assistance underscores the invaluable role of librarians in facilitating effective research endeavors” (Participant 8). Another interviewee mentioned that “collaborating with a librarian aided in upholding the standards of both systematic review and scoping review methods” (Participant 2).

Clarifying the librarian's role to the researcher

Participants emphasized the significance of fully grasping the librarian's role within the review process. An interviewee commented that they “greatly appreciate having librarians involved in reviews, not only because [they’ve] had the pleasure of working with some, but also because their expertise brings a level of comfort” (Participant 9). Another participant indicated that “as someone who lacks [a librarian’s] specialized knowledge, [they] recognize that library sciences involve a rigorous scientific approach, requiring extensive study and constant awareness of developments in this rapidly evolving field” (Participant 8). That being acknowledged, some participants also remarked that it's crucial to recognize that not all librarians possess an equal understanding of the content of a review. An interviewee stated that “while [they] don’t expect [librarians] to be content experts, effective communication allows them to understand [a researcher’s] requirements. Content expertise is something [that the] reviewers bring to the table through the papers [they] include in [their] reviews, and that collaborative effort is valuable” (Participant 7). Another participant mentioned that a collaboration between a research team “extends beyond mere alignment with the general field; it entails working closely with librarians well-versed in the specific subject area under review, be it medicine, education, or social sciences” (Participant 12). The participants pointed out that these steps are crucial for fostering balanced and effective collaborative teams.

Enhancing outreach and promotional approaches

Participants expressed that there are strategies by which librarians can enhance their support for ECRs during the process of conducting systematic and scoping reviews. For example, a participant shared that “it would be fantastic if local university libraries offered regular presentations or workshops, perhaps on a quarterly or monthly basis. These sessions could cover topics such as managing reference software, refining research questions for

systematic reviews, or handling data sources for the review process” (Participant 12). Participants mentioned that when they start a new review project, they often feel overwhelmed by the need to seek out resources and assistance, and it would be immensely helpful if the library could provide readily accessible resources, such as scheduled consultations through the Office of Research or departmental websites, or pre-recorded modules explaining the services available. Participants noted that this proactive approach would greatly assist with troubleshooting and addressing project-related challenges. A participant stated that “aiding in resource development, enhancing accessibility to librarians, and establishing frameworks that enable effective collaboration between librarians and researchers to the fullest extent possible [are extremely helpful]” (Participant 8). Another participant commented that “in libraries where librarians are specialized and grouped according to specific fields, such as those in [their] institution, [these librarians] can hone their expertise within these domains. This, in turn, enables librarians to better support researchers within their respective fields” (Participant 11).

Summary for ECRs Phase 2

In Phase 2 of the study, fourteen ECRs took part, with all participants interviewed in English, and none in French. Among the participants, 9 (64.2%) were affiliated with academic institutions, 2 (14.2%) worked in hospital settings, and 3 (21.4%) worked for community health agencies. Further demographic details were not gathered due to the relatively small size of the health professions education community and the necessity to uphold confidentiality. Early career researchers participating in the study highlighted several barriers associated with conducting SRs and ScRs. These obstacles comprised a multitude of factors that posed challenges to the review process. Among them, notable issues included a deficiency in dedicated time allocated for conducting reviews, a lack of comprehensive understanding regarding proper review methodologies, and insufficiency in resources required to facilitate the successful completion of a review. Each of these barriers underscores the complexity and multifaceted nature of conducting reviews, requiring careful navigation and strategic resolution to overcome.

In addition to identifying barriers, ECRs also highlighted several facilitators that contribute to the successful execution of SRs and ScRs. These facilitators encompass a range of factors, including but not limited to the availability of sufficient resources, which play a pivotal role in facilitating the comprehensive completion of a review. Furthermore, ECRs emphasized

the significance of having a strong team characterized by robust organization and cohesion. This entails not only assembling a diverse and competent team but also fostering effective communication, collaboration, and coordination among team members throughout the review process. By leveraging these facilitators, ECRs can navigate the complexities of conducting reviews more effectively, thereby enhancing the quality and impact of their research contributions to the literature.

Lastly, when considering how librarians can enhance their support for ECRs engaged in conducting SRs and ScRs, several solutions were proposed. Firstly, there is a recommendation to provide education and guidance to ECRs on appropriate methods for conducting reviews, equipping them with the necessary skills and knowledge to navigate the process effectively. Secondly, there is a call to clarify the role of librarians to researchers, ensuring that ECRs understand how librarians can assist them throughout the review process and leverage their expertise to the fullest extent. Lastly, there is an emphasis on enhancing outreach and promotional efforts, aiming to increase awareness among ECRs of the support and resources available from librarians, thus fostering stronger collaboration and engagement between the two parties. By implementing these solutions, librarians can better support ECRs in their research endeavors, ultimately contributing to the advancement of scholarly knowledge and the improvement of research outcomes.

Chapter 5: Librarians - Results for Phase 1 and Phase 2

This chapter describes the methods and results from Phase 1 and Phase 2 of my study with librarians. Phase 1 included quantitative data collected from librarians. The purpose of Phase I was to determine the challenges and barriers faced by librarians in the disciplines of health professions when conducting and instructing SRs and ScRs. The purpose of Phase 2 was to determine the potential facilitators and solutions to overcoming the barriers and challenges that librarians in health professions face when conducting and instructing SRs or ScRs, as well as determining how librarians can better support early career researchers (ECRs) when conducting SRs and ScRs. This chapter presents the findings from the librarians' survey, followed by the findings from the librarians' interviews.

Phase 1 - Librarians' survey

Sample

I surveyed two health sciences librarian groups in English and French. I surveyed librarians through several listservs of professional organizations including the Canadian Health Libraries Association (CHLA) and the Medical Libraries Association (MLA). I emailed a total of 2059 librarians the survey through the CHLA and MLA listservs.

Instrument development

I developed the survey drawing from my literature review, as well as reviewing other surveys created for ECRs (Shepherd, 2012) and librarians (Nicholson, McCrillis, & Williams, 2017). The survey (Appendix O for librarians' survey in English, Appendix P for librarians' survey in French) inquired about their roles in systematic and scoping reviews, barriers, and challenges, and how they overcame them. Table 20 presents a summary of the research questions for Phase 1 and the associated survey dimensions and questions.

Table 20 *Table of specifications for Librarians' survey – Phase 1*

Research Questions	Dimension	Corresponding survey item numbers
To what extent do librarians identify challenges or barriers when conducting SRs or ScRs?	• Frequency of librarians' experience in conducting SRs or ScRs	• Questions 1 to 4
	• Level of librarians' expertise in conducting SRs or ScRs	• Questions 5, 7, 10, 12 and 15
	• Nature of librarians' challenges or barriers when conducting SRs or ScRs	• Questions 6, 8, 9, 11, 13 and 14
To what extent do librarians identify challenges or barriers when teaching about conducting SRs or ScRs?	• Nature of librarians' experience teaching about conducting SRs or ScRs	• Questions 16, 17 and 18
	• Level of librarians' expertise when teaching about conducting SRs or ScRs	• Question 19
	• Nature of librarians' challenges or barriers when teaching about conducting SRs or ScRs	• Questions 20, 21 and 22
To what extent do librarians identify opportunities to address these challenges or barriers when conducting or teaching about SRs or ScRs?	• Level of librarians' opportunities identified (such as training) to address challenges or barriers when conducting or teaching about conducting SRs or ScRs	• Questions 23 and 24

The survey for librarians was comprised of 32 questions, similar to those in the ECRs survey, including screening questions to check the participants' eligibility to participate in the survey, demographics, and follow-up related questions. I added an "I don't know" option to minimize missing responses (Dillman, 2011). There were 13 single choice questions, 8 multiple-

choice questions, and 11 open ended questions. I piloted both surveys with two colleagues (librarians) to ensure clarity, feasibility and comprehension, and revise, as needed (Seidman, 2013). Once finalized, I built the survey in SurveyMonkey, which was hosted on a Canadian server, ensuring that survey data were stored in Canada, subject to Canadian privacy laws. The survey took approximately 15 to 20 minutes to complete. I translated the final versions of the survey into French (with verification from a first language French speaker), then piloted them with a minimum of two French librarians for clarity and acceptability before being administered.

Data collection procedures

I emailed an information letter (see Appendix Q for librarians’ letter of information in English, Appendix R for librarians’ letter of information in French) and the respective survey link to the eligible librarians via the appropriate listservs. Returned surveys indicated consent to participate in Phase I of this study. I distributed the survey using a modified version of Dillman’s (2011) Tailored Design Method to accommodate the online survey environment (Table 21).

Table 111 Modified Version of Dillman’s Tailored Design Method

First Email	
Time point	Day 1
Contents	Email copy of participant information letter and provide a link to the survey
Second Email	
Time point	Day 14
Contents	Thank you email expressing appreciation for participating in the survey, indicate that if the survey has not yet been completed, I hope that it will be soon
Third Email	
Time point	Day 28
Contents	Redistribute survey link and participant information letter

I sent two reminders survey emails to all listservs (see Appendix S for librarians' reminder survey email in English, Appendix T in French). The first reminder email was sent two weeks following the initial survey distribution, and the second email reminder was sent two weeks following the first email reminder. The survey was open for 5 weeks in total. To identify potential participants for Phase 2, I asked survey respondents to indicate their interest in obtaining additional information and potentially participating in Phase 2. I also asked librarians about their challenges and barriers with their involvement and instruction surrounding SRs and ScRs. I provided remuneration to participants for completing the survey in the form of a draw to win one of four \$25 Starbucks gift cards.

Data analysis

For the librarians survey in Phase 1, I calculated descriptive statistics (e.g., percentages, frequencies) for the survey items such as demographics using SPSS. In addition, I conducted a directed content analysis of all open-ended response data, guided by the methodology described by Hsieh and Shannon (2005). According to their framework, the aim of a directed content analysis is “to validate or extend conceptually a theoretical framework or theory” (p. 1281). This approach allows the existing theory to shape the research process by focusing the research questions, providing predictions about variable relationships, and informing the initial coding structure.

The analysis involved a detailed, word-by-word examination of each open-ended response to generate codes. I employed a mixed approach, combining deductive and inductive coding strategies. First, I developed a preliminary codebook based on my conceptual framework, research questions, and survey dimensions. Using this codebook, I deductively coded all open-text responses to align with the established theoretical structure. This deductive phase ensured that the coding reflected the key elements of the framework.

In the second phase, I conducted an inductive coding cycle to identify new codes emerging from the data, beyond those initially defined. This iterative process allowed me to refine and expand the coding scheme. I also analyzed the frequency of word use and synthesized the codes into broader categories for further exploration. This combined deductive and inductive approach ensured a comprehensive analysis of the data while staying rooted in the theoretical framework (Hsieh & Shannon, 2005).

Findings

Characteristics of librarian respondents

I will provide an overview of the survey participants before discussing my findings by research question. A total of 150 out of 2059 (7.3%) librarian participants completed the survey in French and English. Due to the skip logic of the survey and the fact that not all participants answered every item, the number of responses for selected items is less than 150. The survey completion rate was 58%.

Of the 150 participants who responded to the survey, 73 (48.7%) completed the demographic section located at the end of the survey. As depicted in Table 22, respondents worked in a variety of disciplines including medicine, nursing, epidemiology and public health, rehabilitation, and other disciplines (e.g., pharmacy, psychiatry, psychology, allied health, nutrition, health policy and administration, implementation science, social work, veterinary medicine, dentistry, and kinesiology). As depicted in Table 23, respondents worked for a variety of employers including academic institutions, in hospitals, for the government, were self-employed or worked in other occupations.

Table 122 *Survey Respondents' Disciplines for Librarians in English and French (N = 73)*

Disciplines	n	%
Medicine	38	52.1
Nursing	13	17.8
Epidemiology and Public Health	8	10.9
Rehabilitation (i.e., occupational therapy, physical therapy, speech language pathology)	5	6.8
Other	19	26.0

^a Of the 150 respondents who completed the surveys, 73 respondents elected to answer this survey question.

Table 133 *Survey Respondents' (Librarians) Employers in English and French (N = 73)*

Employers	n	%
Academic	50	68.5
Hospital	17	23.2
Government	2	2.7
Industry/Business	1	1.4
Self-employed	1	1.4

Other (Medical, non-hospital, not-for-profit; Research embedded)	2	2.7
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^a Of the 150 respondents who completed the surveys, 73 respondents elected to answer this survey question.

Research Question 1: What are the barriers and challenges librarians in health professions face when conducting SRs and ScRs?

Of the 150 librarian respondents that answered the question that they had completed or participated in a systematic review or a scoping review, 29 (19.3%) respondents indicated that they had completed or participated in a systematic review, 8 (5.3%) respondents indicated they had completed or participated in a scoping review, 113 (75.3%) respondents indicated they had completed or participated in *both* a systematic review and scoping review, and 7 (4.7%) respondents indicated that they had never completed or participated in a systematic review or scoping review. If they had not completed a systematic or scoping review, they were removed from the survey at this point, thus 150 participants who fully completed the survey.

Systematic reviews

When asked how many SRs they had completed as an investigator (besides providing assistance with searching), 95 of the 150 respondents indicated they had only provided assistance to someone else who was conducting a SR (n = 41, 43.1%), completed 1-2 SRs (n = 11, 11.6%), 3-5 SRs (n = 16, 16.8%), 6-8 SRs (n = 8, 8.4%), more than 8 SRs (n = 17, 17.9%) or none (n = 2, 2.1%).

As shown in Table 24, in response to a multiple-choice question, respondents noted a variety of methodological barriers to completing SRs. Other methodological barriers raised in the open-ended answers can be summarized into 7 main categories (Table 25). Respondents were also asked to identify strategies to handle these methodological barriers, which can be summarized into 5 main categories (Table 26).

Table 144 *Methodological barriers of systematic reviews for librarians*

Methodological barriers	n (%)						
	<i>N</i>	Never	Rarely	Often	Always	Not sure	N/A
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.	95	7 (7.4)	31 (32.6)	52 (54.7)	1 (1.1)	3 (3.2)	1 (1.1)
Researcher (or myself) did not have a protocol.	95	4 (4.2)	20 (21.1)	66 (69.5)	3 (3.2)	1 (1.1)	1 (1.1)
Researcher (or myself) did not have one clear answerable question.	95	5 (5.3)	33 (34.7)	54 (56.9)	2 (2.1)	-	1 (1.1)
Question was defined too broadly	96	1 (1.0)	25 (26.0)	66 (68.8)	3 (3.1)	-	1 (1.0)
Question was defined too narrowly.	94	28 (29.8)	49 (52.1)	15 (15.9)	-	1 (1.1)	1 (1.1)
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.	95	8 (8.4)	34 (35.8)	47 (49.5)	4 (4.2)	-	2 (2.1)
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).	96	16 (16.7)	38 (39.6)	33 (34.3)	1 (1.0)	6 (6.3)	2 (2.1)
Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	94	34 (36.2)	36 (38.3)	8 (8.5)	-	13 (13.8)	3 (3.2)
Researcher (or myself) was not using two screeners.	93	22 (23.7)	43 (46.2)	15 (16.1)	1 (1.0)	9 (9.7)	3 (3.2)
Researcher (or myself) was not tracking reasons for exclusion.	94	17 (18.1)	35 (37.2)	18 (19.1)	1 (1.1)	18 (19.1)	5 (5.3)
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	94	14 (14.9)	38 (40.4)	17 (18.1)	1 (1.1)	19 (20.2)	5 (5.3)
Researcher (or myself) did not have or follow a data extraction plan.	94	9 (9.6)	32 (34.0)	25 (26.6)	-	23 (24.5)	5 (5.3)

Table 155 Librarians open-ended answers to other SR methodological barriers

Categories	Illustrative quotes
Students undertaking SRs as course work / as only part of their thesis	<p>“A master’s student is trying to complete a systematic review in a very short time frame: often in one academic term as part of a course or as their final project for their graduate program”.</p> <p>“People who think they can do a systematic review alone. Faculty who sends students to the library to ‘do a systematic review’ but aren’t involved or educated about the real process and time required to actually do a quality systematic review”.</p>
Teaching and consulting at the same time increases workload on librarian	<p>“The inexperienced patrons are just that: they don’t know how to conduct a systematic review and they come to us for education as well as search assistance. The education portion can be very time consuming”.</p>
Unrealistic expectations	<p>“Researchers often have an idea of the number of articles they want to screen, and if it doesn’t fall into that range, they ask the librarian to find a way to reduce the number of results”.</p>
Doesn’t understand the role of the librarian	<p>“I think the teams frequently don’t understand the process and the librarian’s role in it. They also have unrealistic expectations of how much to screen/what to screen. Sometimes explaining what we can search versus what we can’t is a big battle, like they fundamentally don’t understand searching”.</p> <p>“Researchers not accepting advice or methodology offered by librarian”.</p>
Authorship issues	<p>“Being left out of the process once the search was completed, despite being a co-author. Haven’t heard much from the team since the search was done, so have no idea how things proceeded with screening, critical appraisal, etc.”.</p>

Table 166 Librarians open-ended answers for strategies to overcome SR methodological barriers

Categories	Illustrative quotes
Educating researchers	<p>“Referral to articles and resources that help differential review types, such as Grant and Booth (2009), Munn et al. (2018), or What Review is Right for You? – an online tool that provides guidance on choosing review methodology”.</p> <p>“We now provide more education prior to accepting a systematic or scoping review project. We expect a proposal form to be filled out along with providing the protocol. In this way, we are able to assess the project at the get-go and troubleshoot these problems before starting the project”.</p>
Managing expectations	<p>“Setting minimum requirements to accessing our service, i.e. protocol required, protocol registration required”.</p> <p>“We now require that all teams complete a protocol before beginning work on a systematic review, which makes them think through these challenges before they begin”.</p>
Mentorship	<p>“Reaching out to methods experts in the Cochrane Collaboration”.</p> <p>“Consulting with senior faculty and conducting literature searches on best practices for conducting systematic reviews”.</p>
Negotiating authorship ahead of time	<p>“We negotiate timelines and criteria for co-authorship that includes an agreement form that outlines who is doing what”.</p> <p>“Our policy states that we must review the manuscript before publication and also being part of this process early is improving these issues/barriers”.</p>

Furthermore, Table 27 also noted a variety of interpersonal barriers to completing SRs by librarians. Other interpersonal barriers raised in the open-ended answers can be summarized into 4 main categories (Table 28). Respondents were also asked to identify strategies to handle these interpersonal barriers, which can be summarized into 5 main categories (Table 29).

Table 177 *Interpersonal barriers of systematic reviews for librarians*

Interpersonal barriers	n (%)						
	<i>N</i>	Never	Rarely	Often	Always	Not sure	N/A
Research team could not agree on question.	93	30 (32.3)	46 (49.5)	10 (10.8)	1 (1.1)	3 (3.2)	3 (3.2)
A student was leading the project.	94	6 (6.4)	18 (19.1)	62 (66.0)	5 (5.3)	1 (1.1)	2 (2.1)
A student's faculty mentor was not helpful.	94	8 (8.5)	25 (26.6)	52 (55.3)	2 (2.1)	5 (5.3)	2 (2.1)
Researcher refused request for authorship (to librarian or another member of the team).	94	44 (46.8)	30 (31.9)	9 (9.6)	-	4 (4.3)	7 (7.5)
The research team had too many members.	94	37 (39.4)	39 (41.4)	6 (6.4)	-	7 (7.5)	5 (5.3)
The research team had too few members.	94	7 (7.5)	33 (35.1)	43 (45.7)	5 (5.3)	4 (4.3)	2 (2.1)
The research team was dysfunctional.	94	25 (26.6)	40 (42.6)	11 (11.7)	-	13 (13.8)	5 (5.3)
Researcher considered you only as a PDF supplier or provider of administrative tasks.	94	51 (54.3)	31 (33.0)	8 (8.5)	-	1 (1.1)	3 (3.2)
Researcher had unreasonable time expectations.	94	6 (6.4)	24 (25.5)	52 (55.3)	11 (11.7)	-	1 (1.1)
Research team cannot agree on search terms.	94	29 (30.9)	48 (51.1)	10 (10.6)	1 (1.1)	1 (1.1)	5 (5.3)
Communication issues between other research team members.	94	14 (14.9)	43 (45.7)	16 (17.0)	5 (5.3)	12 (12.8)	4 (4.3)

Table 188 Librarians open-ended answers to other SR interpersonal barriers

Categories	Illustrative quotes
Supervisors of students were absent or not available	<p>“Absent supervisors/mentors would hold up the process because they would keep changing their mind or backtracking (rather than just taking the time to attend the initial meetings with me and their junior colleague)”.</p> <p>“Faculty foisting SR projects on undergrad/grad students without providing leadership or support. I’ve also dealt with faculty who assigned SRs, scoping reviews as a course assignment for 3rd year undergrads! In the latter case, I was successful in negotiating with the faculty to change the assignment; in the first example, sometimes pushback works, sometimes it doesn’t</p>
Lack of reliability and/or availability of team members	<p>“Each having a different idea of what was involved, some not pulling their weight and staying to a timeline”.</p> <p>“Some of the issues included researchers suddenly leaving our institution or the systematic review and communication becoming difficult as a result”.</p>
Researcher not understanding the role and/or workload of the librarian	<p>“Researchers don’t trust my expertise and advice re: methodology. Researchers also don’t trust my searching expertise”.</p> <p>“Misunderstanding the librarian’s role despite the researcher signing a MOU before the librarian joins the team”.</p> <p>“On one occasion, I had a researcher assume my role was to simply find PDFs and get articles through interlibrary loan although this was only at the inquiry stage – we never actually seriously discussed the SR.”</p>
Lack of experience on behalf of the researcher and/or research team	<p>“Researchers leading SR have no experience, so the demands or expectations of how the library can help can be conflicting”.</p>

Table 199 *Librarians open-ended answers for strategies to overcome SR interpersonal barriers*

Categories	Illustrative quotes
Managing expectations	<p>“Setting barriers/limitations to accessing my services by imposing minimum requirements, i.e.: need an attending/supervisor, attending/supervisor must be in all communications/meetings, signing of agreement/MOU”.</p>
	<p>“Declined to collaborate with them; spoke with the supervisor directly to make sure they understand the process and what is expected from them”.</p>
Mentorship	<p>“Ask colleagues for advice on how to talk to the researcher”.</p>
	<p>“Discussing with other librarians and faculty for assistance and advice on handling. I am new to some of the difficulties I have encountered working on systematic reviews and am still navigating how to handle them”.</p>
Good documentation	<p>“Providing evidence and rationale for my actions in the interest of transparency”.</p>
	<p>“Having documentation about roles, expectations, etc. Explaining and having agreed upon timelines”.</p>
Establishing relationships with principal investigators	<p>“Our policy and procedures require the PI’s attendance at meetings, however, if they do not attend, I try to establish a good relationship with whomever is leading the project, and I also evaluate their readiness/expertise (and then offer feedback, resources, etc.)”.</p>
Clarifying the librarian’s role ahead of time	<p>“Advocating for myself as a librarian so that the amount of work equals my expectations; less work, please acknowledge; more work, co-author. If a group does not agree to my terms, I politely decline their invitation to collaborate”.</p>
	<p>“Communicating clearly what role I, as the librarian, will bring to the table. Not being offended if the team asks about PDFs of articles but explaining that can be done by RAs, etc.”.</p>

Scoping reviews

When asked how many ScRs they had completed as an investigator (besides providing assistance with searching), 77 of the 150 respondents indicated they had only provided assistance to someone else who was conducting a SR (n = 30, 40.0%), completed 1-2 SRs (n = 19, 24.7%), 3-5 SRs (n = 12, 15.6%), 6-8 SRs (n = 3, 3.9%), more than 8 SRs (n = 5, 6.5%), 'I don't know' (n = 1, 1.3%) or none (n = 7, 9.1%).

As shown in Table 30, in response to a multiple-choice question, respondents noted a variety of methodological barriers to completing ScRs. Other methodological barriers raised in the open-ended answers can be summarized into 3 main categories (Table 31). Respondents were also asked to identify strategies to handle these methodological barriers, which can be summarized into 4 main categories (Table 32).

Table 30 *Methodological barriers of scoping reviews for librarians*

Methodological barriers	n (%)						
	N	Never	Rarely	Often	Always	Not sure	N/A
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.	72	14 (19.4)	25 (34.7)	21 (29.2)	3 (4.2)	1 (1.4)	8 (11.1)
Researcher (or myself) did not have a protocol.	71	9 (12.7)	9 (12.7)	39 (54.9)	5 (7.0)	-	9 (12.7)
Researcher (or myself) did not have one clear answerable question.	71	10 (14.1)	25 (35.2)	27 (38.0)	2 (2.8)	-	7 (9.9)
Question was defined too broadly	71	10 (14.1)	17 (23.9)	33 (46.5)	2 (2.8)	-	9 (12.7)
Question was defined too narrowly.	71	26 (40.8)	27 (38.0)	10 (14.1)	1 (1.4)	-	7 (9.9)
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.	71	11 (15.5)	17 (23.9)	31 (43.7)	3 (4.2)	-	9 (12.7)
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).	71	13 (18.3)	25 (35.2)	14 (19.7)	6 (8.5)	4 (5.6)	9 (12.7)
Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	71	26 (36.6)	22 (31.0)	8 (11.3)	-	5 (7.0)	10 (14.1)
Researcher (or myself) was not using two screeners.	71	16 (22.5)	23 (32.4)	15 (21.1)	2 (2.8)	5 (7.0)	10 (14.1)
Researcher (or myself) was not tracking reasons for exclusion.	71	19 (26.8)	23 (32.4)	9 (12.7)	1 (1.4)	8 (11.3)	11 (15.5)
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	71	13 (18.3)	9 (12.7)	14 (19.7)	4 (5.6)	8 (11.3)	23 (32.4)
Researcher (or myself) did not have or follow a data extraction plan.	71	14 (19.7)	15 (21.1)	17 (23.9)	1 (1.4)	10 (14.1)	14 (19.7)

Table 201 Librarians open-ended answers to other ScR methodological barriers

Categories	Illustrative quotes
Students undertaking SRs as course work / as only part of their thesis	<p>“A master’s student is trying to complete a scoping review in a very short time frame: often once academic term as part of a course or as their final project for their graduate program. Additionally, they are working on the scoping review alone, without other reviewers or collaborators”.</p> <p>“Well, the faculty PI just dropped the project after the student, and I worked very hard on developing and executing the search – so that was very frustrating!”.</p>
Lack of experience on behalf of the researcher	<p>“Lack of familiarity with the purpose for conducting a scoping review vs a systematic review and assuming a ScR is just a quicker version of an SR”.</p> <p>“Not understanding the purpose or the steps involved”.</p> <p>“The challenge is more that they WANT to do a systematic review, but their research question is better suited for a scoping review. I then advise on a number of things: what a focussed SR question looks like, while also educating them on the strengths of a scoping review. Some individuals, however, are very determined to call it a systematic review and shun the scoping review methodology. Honestly, that’s my biggest challenge”.</p>
Searching restrictions placed by researcher / research team	<p>“Scoping reviews bring more researchers with questions that are too broad and retrieve too many results, but they don’t want to narrow them”.</p>

Table 212 Librarians open-ended answers for strategies to overcome ScR methodological barriers

Categories	Illustrative quotes
Managing expectations	<p>“Encourage the team to clearly define a concept and draw boundaries, even if just for the purposes of clearly articulating study limitations”.</p> <p>“I do have long conversations at the beginning of the search process to manage expectations”.</p>
Mentorship for researchers from librarians	<p>“Coaching the team/investigators on methodology”.</p> <p>“Conversations about feasibility, lots of pre-work reading! And any pilots to ensure the project will be feasible and answer the question”.</p>
Educating researchers	<p>“Conducting informational research consultations with researchers; running a workshop for faculty and grad students on evidence synthesis to demystify the review process”.</p> <p>“Meeting with researchers to clarify topic, referring them to authoritative sources for best practices”.</p>
Meeting frequently with research team	<p>“I have requested a meeting with the parties involved”.</p> <p>“Lots of discussion with the research team/primary investigator”.</p>

Furthermore, Table 332 also noted a variety of interpersonal barriers to completing ScRs by librarians. Other interpersonal barriers raised in the open-ended answers can be summarized into 4 main categories (Table 34). Respondents were also asked to identify strategies to handle these interpersonal barriers, which can be summarized into 2 main categories (Table 35).

Table 223 *Interpersonal barriers of scoping reviews for librarians*

Interpersonal barriers	n (%)						
	<i>N</i>	Never	Rarely	Often	Always	Not sure	N/A
Research team could not agree on question.	65	16 (24.6)	28 (43.1)	14 (21.5)	1 (1.5)	-	6 (9.2)
A student was leading the project.	65	11 (16.9)	17 (26.2)	27 (41.5)	3 (4.6)	-	7 (10.8)
A student's faculty mentor was not helpful.	65	11 (16.9)	17 (26.2)	27 (41.5)	3 (4.6)	-	7 (10.8)
Researcher refused request for authorship (to librarian or another member of the team).	65	29 (44.6)	19 (29.2)	3 (4.6)	-	1 (1.5)	13 (20.0)
The research team had too many members.	65	35 (53.8)	19 (29.2)	3 (4.6)	-	2 (3.1)	6 (9.2)
The research team had too few members.	64	11 (17.1)	20 (31.2)	22 (34.3)	3 (4.7)	2 (3.1)	6 (9.4)
The research team was dysfunctional.	65	22 (33.8)	28 (43.1)	3 (4.6)	-	5 (7.7)	7 (10.8)
Researcher considered you only as a PDF supplier or provider of administrative tasks.	65	36 (55.4)	18 (27.7)	3 (4.6)	1 (1.5)	-	7 (10.8)
Researcher had unreasonable time expectations.	65	8 (12.3)	17 (26.2)	27 (41.5)	8 (12.3)	-	5 (7.7)
Research team cannot agree on search terms.	65	21 (32.3)	25 (38.5)	12 (18.5)	1 (1.5)	-	6 (9.2)
Communication issues between other research team members.	65	14 (21.5)	23 (35.4)	16 (24.6)	2 (3.1)	4 (6.2)	6 (9.2)

Table 234 *Librarians open-ended answers to other ScR interpersonal barriers*

Categories	Illustrative quotes
Supervisors of students were absent or not available	“Absentee mentor/supervisor is also very much a problem on scoping reviews that I have assisted on”.
Lack of reliability and/or availability of team members	“I was on one team where people kept leaving for other jobs, which it made increasingly difficult to meet”.
Researcher not understanding the role and/or workload of the librarian	“One of my scoping reviews has 10 members including myself. I am the only one with experience doing a scoping review and the other team members are not trusting my expertise or advice”.
	“Lack of communication between librarian and research team. Often the research team left the librarian out of meetings”.
Lack of experience on behalf of the researcher and/or research team	“Even faculty are often less familiar with scoping reviews, so it can be harder to rely on them for assistance”.
	“No one can agree on what a scoping review is”.

Table 245 *Librarians open-ended answers for strategies to overcome ScR interpersonal barriers*

Categories	Illustrative quotes
Managing expectations	<p>“We try to manage these things upstream. They know from the start of the process that they must use two screeners, what the conditions are for librarian co-authorship, and so on”.</p> <p>“Clear communication about expectations, timelines and processes”.</p> <p>“Setting limitations/barriers to service until issues are resolved”.</p>
Establishing relationships with principal investigators	<p>“Tried to keep in constant contact with project investigator, even via email only”.</p>

Research Question 2: What are the barriers and challenges librarians in health professions face when instructing how to conduct SRs and ScRs?

When responding to the question if they had ever attended any professional development courses on systematic reviews, 72 of the 150 participants responded as follows: (a) 24 answered ‘Yes, it was a section of a course or workshop I was taking’ (33.3%); (b) 46 answered ‘Yes, the entire course was about it’ (63.9%), and; (c) 2 answered “No, nothing in the course was about it’ (2.8 %). When responding to the question if they had ever attended any professional development courses on scoping reviews, 72 respondents responded as follows: (a) 29 answered ‘Yes, it was a section of a course or workshop I was taking’ (40.3%); (b) 10 answered ‘Yes, the entire course was about it’ (13.8%); (c) 23 answered “No, nothing in the course was about it’ (31.9 %); (d) 7 answered ‘I’m not sure’ (9.7%), and; (e) 3 responded ‘Not applicable’ (4.2%).

When asked what topics they had instructed considering their experience teaching systematic or scoping review methods, 63 of 150 respondents indicated their topics in Table 36.

Table 256 *Topics instructed by librarians for systematic or scoping reviews (N = 63)*

Topics	n (%)
What a systematic review and/or scoping review is (i.e., overall principles)	60 (95.2)
How to manage expectations of the review team	31 (49.2)
How to identify if a review or protocol on the same topic already exists	50 (79.4)
How to formulate or refine a review question	58 (92.1)
How to use PRISMA (or appropriate extensions)	46 (73.0)
How to use appropriate subject headings or key terms appropriate to a specific database or resource	63 (100)
How to set up search alerts for new publications	34 (54.0)
How to use citation management or review software	59 (93.7)
How to search the grey literature	48 (76.2)
How to search using additional methods for locating studies (i.e., searching trial registries, searching cited references, etc.)	47 (74.6)
How search methods should be reported for reproducibility and transparency	57 (90.5)
I have never taught about systematic or scoping reviews	4 (6.3)

When asked what challenges they had experienced when teaching systematic or scoping reviews in open-ended answers, respondents indicated the following:

- 1) Researchers are not giving due consideration;
- 2) Readying thorough training for researchers who arrived unprepared for the workshop.
- 3) Insufficient attendance;
- 4) Needing to instruct SR or ScR methods in a brief timeframe, which is unrealistic for a proper teaching of these methodologies;
- 5) Managing the number of people in one session, with large groups posing particular challenges;
- 6) Researchers believing they possess the knowledge to conduct a review already; and,
- 7) Offering technical support concurrently with teaching.

When asked for strategies to mitigate these instructional challenges, respondents suggested the following solutions:

- 1) Advising learners of resources ahead of time;
- 2) Preparing with authoritative sources and examples;
- 3) Being open to feedback from learners;
- 4) Collaborating with colleagues at their home institution, as well as those from other institutions;
- 5) Scheduling more time for instruction, if possible; and,
- 6) Teaching with a mixture of synchronous and asynchronous methods.

Summary for Librarians Phase 1

Overall, 73 librarians working with members of the HPE community participated in Phase 1 of this study. Their responses suggest that the largest methodological barriers for systematic reviews included students undertaking SRs as course work or only part of their thesis with no supervision, teaching and consulting at the same time increases workload on librarian, navigating unrealistic expectations, the researcher and/or research team not understanding the role of the librarian, and authorship issues. Strategies to overcome these barriers identified by librarians have included educating researchers, managing expectations, mentorship provided by librarians to researchers, and negotiating authorship ahead of time. Interpersonal barriers

identified by librarians conducting SRs included supervisors of students were absent or not available, lack of reliability and/or availability of team members, researcher not understanding the role and/or workload of the librarian and lack of experience on behalf of the researcher and/or research team. Strategies to overcome these barriers identified by librarians have included managing expectations, providing mentorship to researchers, ensuring good documentation, establishing relationships with principal investigators, and clarifying the librarian's role ahead of time.

The survey found similar methodological barriers with ScRs as SRs included students undertaking SRs as course work or only part of their thesis with no supervision, lack of experience on behalf of the researcher and/or research team, searching restrictions placed by the researcher and/or research team. Strategies to overcome these barriers included managing expectations, providing mentorship for researchers by librarians, educating researchers, and meeting frequently with the research team. Interpersonal barriers identified by librarians conducting ScRs included supervisors of students were absent or not available, lack of reliability and/or availability of team members, researcher not understanding the role and/or workload of the librarian and lack of experience on behalf of the researcher and/or research team. Strategies to overcome these barriers identified by librarians have included managing expectations and establishing relationships with principal investigators. Lastly, librarians identified several challenges when instructing on the methodologies of systematic and scoping reviews, as well as some strategies to help mitigate these challenges.

The next section describes Phase 2 of this study, where I explored the potential facilitators and solutions to overcoming the barriers that librarians in health professions face when conducting and instructing SRs or ScRs, as well as determining how librarians can better support ECRs when conducting SRs and ScRs.

Phase 2 – Interviews

The purpose of Phase 2 was to expand upon the data collected from both surveys by conducting qualitative semi-structured interviews with a selected group of librarians who have published at least one SR or ScR. Based upon Phase I, the interviews expanded on the identified barriers from the survey and examined potential facilitators and solutions that librarians use to overcome the identified barriers, as well as strategies librarians can develop to help ECRs overcome these barriers. The following research questions guided this phase:

4. What are the barriers librarians in health professions face when conducting and instructing how to do SRs and ScRs?
5. What are potential facilitators and solutions to overcoming the identified barriers that librarians in health professions face when conducting SRs or ScRs?
6. According to librarians, how can librarians better support ECRs when conducting SRs and ScRs?

Sample

I used criterion-based sampling to identify and recruit librarians who completed the survey in Phase 1. I contacted through email the 15 librarians who indicated interest in participating in an interview, and all 15 respondents replied to my email and agreed to participate in an interview. Librarians who reported strategies they identified to better support ECRs when conducting these reviews were selected first, over those who provided no response, on a first come, first interviewed basis.

Instrument development

I used the findings from Phase 1, as well as the above-mentioned literature review, to inform the development of my semi-structured interview guide for Phase 2 (See Appendix U in English, Appendix V in French). Table 37 presents the research questions for Phase 2 and the corresponding dimensions and questions included in the guides. I developed the guide for librarians who reported barriers and challenges when conducting SRs and ScRs, as well as facilitators and solutions that librarians utilized to better support ECRs when conducting these reviews. I developed an introductory script that consists of several open-ended questions,

including additional probes to allow for expansion. There were 4 questions included in the guide. I piloted the interview questions with two librarian colleagues to ensure clarity, feasibility, and comprehension, and revised as needed (Seidman, 2013). I wanted to ensure that I did not miss any relevant questions or probes, and that they were clearly worded. I translated the final versions of the guides into French (with verification from a natural French speaker), then piloted the guides with a minimum of two French librarians for clarity and acceptability before being administered.

Table 267 *Table of specifications for Phase 2 interviews*

Research Questions	Dimension	Corresponding interview numbers
To what extent do librarians identify barriers when conducting and teaching about SRs or ScRs?	• Nature of librarians' barriers when conducting SRs or ScRs	Question 1
	• Nature of librarians' experience teaching about conducting SRs or ScRs	Question 1
	• Level of librarians' expertise when teaching about conducting SRs or ScRs	Question 1
To what extent do librarians identify facilitators when conducting or teaching about SRs or ScRs?	• Nature of librarians' facilitators when conducting SRs or ScRs	Question 2
	• Nature of librarians' experience teaching about conducting SRs or ScRs	Question 2
	• Level of librarians' expertise when teaching about conducting SRs or ScRs	Question 2
	• Nature of librarians' barriers when teaching about conducting SRs or ScRs	Question 2
What solutions did librarians identify to address these challenges or barriers when conducting SRs or ScRs?	• Level of librarians' solutions identified to address barriers when conducting SRs or ScRs	Questions 2,3

Data collection procedures

I contacted participants who responded and indicated interest in participating in an interview in Phase 1 via email and provided them with a letter of information and consent form (see Appendix W for librarians' letter of information in English, Appendix X in French, and Appendix Y for librarians' consent form in English, Appendix Z in French), inviting them to participate in an interview for Phase 2. Each interview took place during a time that is convenient for the interviewee. Interviews took place virtually, lasting approximately 30 minutes to one hour. All interviewees signed and emailed an informed consent to me before starting the interview. Each interview was audio-recorded and transcribed using Otter.ai, and then I listened to each interview again to clean up the transcription to ensure accuracy for the wording. I provided remuneration to participants for completing the interview in the form of a draw to win one of four \$25 Starbucks gift cards.

Data analysis

For the interviews, I followed the systematic and iterative approach put forth by Miles, Huberman, and Saldana (2014) that generates meaning from data and testing and confirming findings. The use of data displays to first organize the data is encouraged by these authors, to better explore, describe, order, explain and predict the data. Following the guidance provided by Miles et al. (2014), I created a provisional list of *a priori* researcher-generated codes, I tracked categories based on the questions asked in the interview guide, as well as the survey as I wanted to further investigate the nuances regarding barriers (see Table 38). I did this initial step using MAXQDA software (<https://www.maxqda.com/>) to track and record my analytic process. Second, I thoroughly read through each transcript to understand the data in a general sense. Third, I re-read each transcript a third time and began making notes referencing a category. I recognized those categories from the initial coding system and added notations to reference new or refined codes. Fourth, I then refined the coding system again, using deductive and inductive coding to generate a list of comprehensive codes, using a process of pattern coding (Miles et al., 2014). Following the guidance of Patton (2014), I have decided against reporting the number of respondents who reported each category to not detract from the content of what the interviewees said. Additionally, I have provided only quotes that embody the refined codes, rather than reporting all quotations collected from interviewees in order to provide a “verbal display that

represents and presents data vividly about the study’s phenomenon of interest” (Miles, Huberman, & Saldana, 2020, p. 324).

Table 38 *Overview of Phase 2 categories and codes*

Category	Codes
Barriers to librarians conducting and instructing how to do SRs and ScRs	<ul style="list-style-type: none"> • Inadequate understanding of appropriate research question formulation • Lack of dedicated time allotted for reviews • Lack of the researcher understanding proper review methods • Lack of the researcher understanding the role of the librarian • Insufficient time to adequately instruct researchers on review methods
Facilitators to librarians helping ECRs conduct SRs and ScRs	<ul style="list-style-type: none"> • Ensuring open and clear communication with the PI and research team • Teaching researchers about appropriate methods for conducting reviews • Receiving mentorship from colleagues
Solutions to how librarians can better support ECRs conducting SRs and ScRs	<ul style="list-style-type: none"> • Educating researchers on appropriate review methodologies • Managing researchers’ expectations effectively • Clarifying the librarian's role to the researcher • Enhancing outreach and promotional approaches

Trustworthiness

The findings from the surveys (Part 1) and interviews (Part 2) of this study were triangulated with each other to ensure credibility, dependability, and confirmability (Lincoln & Guba, 1985). Throughout both parts of the study, I used memo writing to document the

experiences, assumptions, decisions, processes, and actions taken while interpreting the data. By providing a rich description of memo writing, as well as an audit trail, the trustworthiness of the study is further strengthened by the transferability to other contexts and the dependability of consistent findings that could be repeated (Lincoln & Guba, 1985). I also engaged in peer debriefing with my thesis supervisor throughout Phase 2.

Findings

Characteristics of the interviewees

Fifteen librarians participated in Phase 2 of the present study, 14 in English and 1 in French. Of the 15 participants that I interviewed, 8 (53.3%) indicated they worked in an academic institution, 3 (20%) worked in a hospital setting, and 1 (6.7%) worked for a government agency. At the time of their interviews, all participants indicated that they worked as a full-time librarian or information specialist. Other demographic information was not collected, as the community of medical librarians is small, and confidentiality needed to be maintained.

Research Question 1: What are the barriers and challenges librarians in health professions face when conducting and instructing SRs and ScRs?

In the sections that follow, I will describe the barriers that librarians in health professions encounter when helping ECRs conduct SRs and ScRs. The barriers to conducting SRs and ScRs included: a) Formulating a research question; b) Lack of dedicated time allotted for reviews; c) Lack of the researcher understanding proper review methods, d) Lack of the researcher understanding the role of the librarian, and; e) Insufficient time to adequately instruct researchers on review methods.

Inadequate understanding of appropriate research question formulation

The interviewees indicated that helping ECRs formulate their research question was one of their biggest challenges. For example, an interviewee mentioned that ECRs often have “such a big idea [for their research question] ... [that] trying to guide them into how best to formulate it so that we can get to the crux of what they really want” (Participant 2) is laborious for librarians. Another participant also emphasized that “some of the challenges often come with the lack of knowledge of the researchers on what it means to be systematic in their approach ... and [they]

really need think about the question they're trying to ask through the systematic review methodology” (Participant 3). Whereas another interviewee stated if an ECR hasn't “conducted [any kind of] systematic review at all, the [research] question is often too broad or too unspecified, or they haven't thought a lot about it, and [I] sometimes [have to try] to tease out what they're trying to [say]” (Participant 6).

The interviewees also indicated that without the proper support in place for early career learners such as appropriate supervision from a mentor to help guide them in formulating their research question, it often falls to the librarians “who are not the content experts” (Participant 4). Another participant remarked that “the challenge of it comes to me, the searcher, who isn't even really the subject expert, to try to glean out of the team [the] focus their [research] question” (Participant 3). Another interviewee noted that “it quickly becomes clear to me that whoever is supervising them does not have a lot of background in doing reviews, because they would never let them pick a topic that broad... [which makes it challenging] because then you're dealing with ... not great methodological support from their supervisor or their PI, or whoever the head honcho person is” (Participant 13).

Lack of dedicated time allotted for reviews

Interviewees pointed out that another barrier is the lack of dedicated time allocated to conducting reviews. They specified that researchers underestimate the time required to do SRs and ScRs, as “they haven't set aside as much time as they would like to [for]the project” (Participant 1). As another participant pointed out:

I get requests where they want me to be a collaborator, [and] they have an extremely short turnaround time... [as] it's not feasible for me to turn around a systematic review search in 10 days. The biggest challenge I have is negotiating the timelines, and just educating people about how long these things really take to do” (Participant 5).

Participants also remarked that reconciling the time expectations and urgency imposed by researchers on librarians is challenging and does not align accurately with reality. Participant 6 observed that “... everybody wants it done today... and [there is a] number of times that I've gone out of my way to do a search quickly because the team requested it. And then I can check and see in Covidence that no screening has happened a month later. [They]didn't need it ASAP.

[They] just wanted it done.” Participant 7 adds that librarians “might email [researchers] with a question or send them some sample citations [for them to review]... And [then they] don't hear from them for weeks.” The interviewees reflected on how they wanted to feel like collaborators with the research teams, but the “lack of respect on our time” (Participant 11) was frustrating. Participant 9 stated that “... it just doesn't make sense to contact me a month or two before you're actually ready to go and tell me it's urgent.”

Interviewees also mentioned that they wished they “had more time to spend with early career researchers, especially grad students” (Participant 5). They explained how many students have “so much pressure to publish [but keep] getting poor advice from [their] supervisor and have never developed the skills in [their] undergrad to do the things the [supervisor] wants them to do” (Participant 7). The interviewees further stated that, while there are many courses and workshops offered for students on systematic reviews and other knowledge synthesis, “they tend to focus so much when they're doing the review on the data extraction and the findings as opposed to the skills to do the searching and identifying the evidence” (Participant 13) but there “just isn't enough time to help all the grad students who need help with these types of reviews” (Participant 3).

Lack of the researcher understanding proper review methods

Another obstacle highlighted by the interviewees is the lack of understanding proper review methods by the researchers. One librarian explained that one barrier is “working with early career researchers, [as] they don't always have a really good grasp over all of the methodology of the review approach they've chosen. And so, they have a really difficult time matching up [the] research question with correct methodology” (Participant 7). Another librarian commented that researchers can “really have their heart set on doing a particular type of review, regardless of the research question, [and] that can be a bit of a challenge to work with them to make changes based on our recommendations, or conversations that we have” (Participant 11). The participants viewed a massive challenge to be that researchers are not “fully understanding the difference between a systematic review and a scoping review” (Participant 2). They discussed how “it is very tricky, sometimes, depending on the topic” (Participant 3) but “their default is just to say, well, we want to do a systematic review ... [but] when they present me with the topic, I say to them, this is more of a scoping review. And then a lot of teaching goes into ...

what the differences are ... which are sometimes very, very slight” (Participant 2). Participant 10 added that “...even more now, since the pandemic and all the insanity in our world, [it’s been challenging] to be more present with them and where they’re at, and to just say hey, let’s take it to the next step. And the first question [has been]: Is this really a scoping review? Or are we doing a comprehensive literature review and narrative review? And what I have found is that there has been a trend, away from the scoping reviews into calling more of a narrative review or comprehensive literature review. Nomenclature has really been changing.”

The interviewees also pointed out that another obstacle arises when early career researchers struggle to find a committed mentor to assist them with their reviews. For example, a participant explained how librarians “almost ended up being their mentor, instead of their actual mentor, because [librarians are] guiding them through the entire process” (Participant 8). The ECRs “only go back to their fellow or attending physician for follow-up questions” (Participant 5) but it’s really librarians “doing a lot of the work and trying to guide them...which takes up a big chunk of time” (Participant 11). As one interviewee noted, “It is especially difficult on librarians, as we are not content experts but searching experts, so oftentimes [when] you meet with a researcher who is a resident or fellow, they’re playing the intermediary between you and the [principal investigator]” (Participant 4). The interviewees also mentioned that waiting to hear back from the ECRs after a meeting in order to ask follow-up questions to the principal investigator (PI) creates difficulties inquiring about methodologies that might be more effectively addressed in a collective meeting. As Participant 12 stated, “I understand doctors are busy, but sometimes, I think a lot of it could be helped if they just took 30 minutes out of their day to be present in the meeting. And I can't tell you how much smoother meetings run when the PI is there as well. They also have a lot of experience doing these kinds of things, [and they can] piggyback off of what I'm talking about [which means] that there's a lot less information that gets lost.”

Another challenge that the participants encountered was that “a lot of researchers just lack search skills in general, so it can be a really big learning curve, if [the librarians aren’t] ones doing the searching, [and] they're going to take care of that themselves. It can be hours of work to get them to a point where they're able to do the searching themselves.” (Participant 5). In line with these discussions, another participant mentioned that many researchers are “never able to provide keywords, even though they’re supposedly the topic experts” (Participant 3) which the

interviewees explained can be a barrier as the librarians are the “ones who have to research their topic [but the researchers] who are the topic experts ... have no concept of what keywords are” (Participant 1).

Interviewees also explained how researchers will “complain about the number of results [they will get from a search strategy] because they don't realize what goes into a systematic review, and that you're not just going to be reviewing 100 articles. Sometimes, [it can be] 1000 articles or even more” (Participant 3). Librarians “will run the same topic but different searches to show [researchers] the differences between the two or the three [concepts], and [the librarians will say]: well, here's what you're getting if you eliminate this concept, [then] that means you are getting less results ... Sometimes showing them, telling them, sometimes it flies over their heads, [and they respond that they] just want 100 results, and that's frustrating” (Participant 9).

Lack of the researcher understanding the role of the librarian

Interviewees expressed a common observation wherein researchers often misunderstand the role that librarians could play in systematic or scoping reviews. Many reflected on how their role “is as a librarian, not a methodologist,” and a huge barrier was “trying to carve out that space of saying: I am a member of the team” (Participant 11). And that, while librarians can “contribute to the research component and searching, [we] can't fill in the gaps for those other areas” (Participant 14). Another participant described their role as “helping [researchers by] providing feedback on the protocol for the areas that [they are] comfortable supporting and guiding them through. But one of the biggest challenges is being called to help with those other things [such as] ... data analysis [and] meta-analysis. I will point you to the Cochrane handbook, or the JBI manual, but that's my specific [role]” (Participant 13).

Moreover, this lack of understanding of the role that the librarian plays in knowledge synthesis can “make the work that we do challenging to work within the team” (Participant 6). When librarians are working on the collaborations for these reviews, they are brought on “as the expert in searching, not the expert in X topic” (Participant 3). Librarians “are challenged to create search strings and search methods ... in areas we don't know much about. One minute, you're diving into one subject, and then the next minute, you're diving into another topic, which is challenging. In the end, we just want to be able to build the things that are going to be great for the team” (Participant 9). Another interviewee explained that while ECRs can exhibit an elevated

level of eagerness and willingness to trust and inquire, “building that trust, sometimes, is a little difficult as well” (Participant 1). The challenge stems from their tendency to seek guidance while hesitating to fully recognize the expertise of the librarian, instead favoring the advice of a medical professional who may lack expertise in knowledge synthesis. Despite a librarian’s experience and recommendations, ECRs may insist on following their own path, “which can lead to feelings of being undervalued” (Participant1).

Insufficient time to adequately instruct researchers in review methods

Participants faced a challenge due to inadequate time allocated for instructing ECRs in systematic and scoping reviews. There's a delicate balance between the amount of information provided, the time available, and the expectations of both the learners and the facilitators, many participants mentioned. For example, one participant noted that they “often encounter situations where [they are] asked to teach students how to conduct a systematic review within a limited timeframe. An instructor will ask: Can you teach the students how to do a systematic review in an hour? And [they respond]: no, no, I can't” (Participant 13). Librarians stated that it's simply not feasible to cover such complex topics thoroughly and interactively in that short amount of time, though they make every effort to create a session that aligns with these expectations, which can be quite demanding. Finding effective solutions to meet these requests is challenging. One participant acknowledged that some “institutions [can] offer multi-step workshops or teach systematic review courses, [yet] it's still difficult to adequately address the needs of completely inexperienced participants within a brief session” (Participant 10). This poses a significant hurdle, especially since expecting students to complete these projects without ongoing guidance from a methodologist is unrealistic, even at the graduate level, participants remarked.

Librarians who were interviewed also indicated that many ECRs will approach them seeking further assistance following a group instructional session, which can be time consuming. Given the limited time available for teaching SRs and ScRs, participants noted the possibility of "over-simplifying an example" as a time-saving measure. However, students will often struggle when attempting to apply the concepts to their own research questions, wondering why it's not as straightforward as initially presented. This results in increased time that a librarian must allocate to an individual, potentially undermining the intended efficiency. Participants emphasized that the one-on-one approach does offer valuable opportunities for tailored support and guidance.

Through scaffolding, librarians can assist students in piecing together the various components of their projects and direct them to relevant resources, despite being labor-intensive.

Adding to this, another participant indicated that offering a “hands-on, practical approach seems to [resonate] well with students, offering them valuable insights into real-world search practices” (Participant 14). However, as other interviewees indicated, conducting such sessions demands considerable time investment, making it challenging to accommodate within shorter timeframes, which typically range around 45 minutes for instructional sessions. The interviewed librarians emphasized the importance of setting realistic expectations, highlighting that mastering knowledge synthesis is an ongoing learning journey rather than a one-time event.

Research Question 2: What are potential facilitators to overcoming the barriers that librarians in health professions face when conducting SRs or ScRs?

In the sections that follow, I will describe the facilitators that librarians in health professions use to overcome the barriers faced when conducting SRs and ScRs. The facilitators a) Ensuring open and clear communication with the PI and research team; b) Educating researchers on proper review methods, and; c) Receiving mentorship from colleagues.

Ensuring open and clear communication with the PI and research team

Interviewees conveyed that open and transparent communication between librarians and the PI of the research team played a facilitating role. Their preference initially is to meet with the PI and other research team members, as appropriate, “in a Zoom or Teams meeting rather than an email because a lot gets lost in an email” (Participant 2). In addition, to properly prepare for this initial meeting, librarians will have “a checklist of things you should do before we meet so that ... they're at a certain level with their review [before we meet]” (Participant 5). This advanced preparation ensures that “it’s not going to be ... a waste of time to meet with them” especially if they are not “just not ready to meet with us at a certain point” (Participant 6).

Interviewees also remarked that creating and maintaining documentation helped them ensure open and clear communication with the research team as they found “documentation with a rationale [to be] really, really beneficial” (Participant 14) as “putting key things in writing is really useful” (Participant 5). It allows librarians to “leverage their knowledge as a research professional” in order to “demonstrate why some methods are better than others” (Participant 12). While a back and forth exchange of ideas can be collegial, interviewees remarked that “there

can be pushback from the research team” therefore “the best solution is to have concrete examples and concrete responses [such as] showing some protocols, showing systematic reviews on a topic, [to demonstrate that] the actual scope of the project is unreal” (Participant 15).

Lastly, interviewed librarians mentioned that consistent communication with the PI and research team is imperative to “ensuring we are on the same page” (Participant 6). They mentioned that frequent check-ins with their research teams was important, and if there was a prolonged silence from them, especially if “they were eager beavers when they first came to [a librarian], alarm bells start going up” because they might feel disheartened by the discussions with the librarians (Participant 7). To address this, interviewees remarked that they would “often send a quick email just to touch base and reassure them that [they’re] still available for any questions or concerns they may have... it’s a simple gesture, but it lets them know they can reach out to [a librarian at] anytime” (Participant 9). Another participant explained that this is “particularly important for younger members of the team who may feel hesitant to approach [librarians]” and by emphasizing “open communication and encouraging them to ask anything, [librarians] aim to create a supportive environment” (Participant 5). The interviewees believed that personalizing interactions and being approachable fostered a better rapport and ultimately enhanced their collaboration with the research team.

Teaching researchers about appropriate methods for conducting reviews

Librarians interviewed emphasized the importance of educating research teams on the appropriate methods required for a specific review. As one participant mentioned: “As cumbersome as it is sometimes, to be the teacher, I think finding key resources and bringing them up in meetings has been a really big help” (Participant 2). Many interviewees outlined an approach they take towards this education component including “[developing] sets of handouts to make [their] one hour consultations with a team more productive, [with] examples of...handouts [including database selection” (Participant 3). The preparation of these handouts and the proactive sharing of them before meeting with the researcher and research team have “taken a 10 minute conversation down to a 2 minute conversation” (Participant 3).

Another educational aspect mentioned by interviewees involved offering a workshop series for students to participate in. For example, one participant commented that their institution “offers a workshop series that we can send our students and researchers to, every quarter”

(Participant 3) with many “being recorded because we were doing everything online during the pandemic” (Participant 9). And while some are still offering their workshop series online, others are “offering it synchronously, in addition to having the recordings available to researchers” (Participant 12). Though it is challenging to keep the information updated, both the “asynchronous and synchronous content is just invaluable” (Participant 4). In addition to these workshops, some of the librarians interviewed also mentioned that they maintain Research Guides for systematic and scoping reviews because “it’s clean, it’s up to date, it’s so valuable ... I can just go back to it and share it with researchers [and students] all the time” (Participant 15). These resources are structured to guide researchers through the entire process, starting from formulating the question, and continuing through searching, screening, and other necessary steps.

Receiving mentorship from colleagues

Interviewees noted that another supportive factor for them was receiving mentorship from their colleagues. One participant noted that they “turn to other health sciences librarians in [their] immediate team at [their] academic institution ... because [they] have that level of trust built with certain colleagues, where [they] feel like [them] can ask those questions, candidly” (Participant 12). Another librarian noted that if they were “veering off course, [their colleagues] would kindly point it out” (Participant 3), as they had that level of trust to seek help when needed. One participant noted that they could “scoot over [their] chair and be like: Hey boss! I’m dealing with such and such about this and this ... and it really opens up a dialogue if they ever had a similar case” (Participant 2). Simultaneously, some interviewees also mentioned that providing mentorship to newer colleagues was also beneficial. Participant 10 explained it as:

The biggest thing is something that, you know, you can't buy for love or money, which is ... experience. The ways that I handle those interpersonal and methods challenges now are different than I did a decade ago. And when I see newer colleagues who are grappling with those issues, I really feel for them because you [can now] suggest approaches to those problems or those challenges.

Another participant also remarked that it “doesn’t actually get more comfortable to implement suggestions ... until you have more experience, more confidence” (Participant 13). Challenges still arise when having difficult conversations “around authorship or

acknowledgements or the contributions of librarians” (Participant 5). By having these conversations earlier with researchers, interviewed librarians commented that it would “get them into a practice of consistently having those difficult discussions” and would “raise their confidence faster” (Participant 3). During these interviews, librarians noted that both the capacity to request assistance and to offer support with systematic and scoping reviews is essential among librarians.

Research Question 3: According to librarians, how can librarians better support ECRs when conducting SRs and ScRs?

In the subsequent sections, I will delineate how librarians in health professions can enhance their support for ECRs during the conduct of SRs and ScRs. These strategies encompass: a) Educating researchers on appropriate review methodologies; b) Managing researchers’ expectations effectively; c) Clarifying the librarian's role to the researcher; and d) Enhancing outreach and promotional approaches.

Educating researchers on appropriate review methodologies

Librarians expressed the significance of educating research teams about the proper methods necessary for a particular review. Many interviewees stressed that providing an orientation to the library and its services is beneficial rather than delving into SRs or ScRs right away, as it “takes away that barrier of [the student or researcher being] too shy or too scared, or overwhelmed” (Participant 2), and establishes connections with researchers that is crucial.

All participants emphasized that any researcher interested in conducting a scoping or systematic review should undergo some form of preparatory course. One participant indicated that even “seasoned researchers should consider periodic refresher courses, perhaps every decade, as reporting guidelines and methodologies evolve over time” (Participant 4), as “advancements in software” and “changes in best practices” can occur, thus staying updated is crucial. Another participant remarked that the “emphasis on continuing education could be implemented as a university-wide initiative covering all aspects of systematic reviews, not just the search methodology ... [and then] there's less of [a] burden on the librarians to fill the gaps.” (Participant 7).

Numerous librarians interviewed also outlined that conducting teaching sessions on SRs and ScRs posed distinctive challenges that needed to be addressed. They agreed that “it’s

important to acknowledge that it can't be taught effectively in just one hour or one day due to its complexity” (Participant 2), and that “ideally, a series of sessions would be necessary” (Participant 4). Though many librarians admitted that specific infrastructure and resources would need to be in place for this to happen, especially for larger teaching sessions, “even for smaller academic institutions with medical schools or research programs, it's worth considering similar initiatives, as they are likely to receive a positive response” (Participant 12). Additionally, many participants agreed that “smaller classes covering topics such as an introduction to Covidence and citation management software, [as well as] creating Subject Guides” (Participant 3) have helped researchers navigate technologies that would help them with their reviews. These sessions “aim to provide practical assistance that researchers can apply immediately” (Participant 15) such as teaching researchers how to formulate PICO questions or providing worksheets to help them identify their main concept. The interviewed librarians found that starting with small steps to not overwhelm researchers, especially ECRs, have been immensely helpful by “gradually building upon these foundational skills, [which allow] researchers [to] better navigate the complexities of systematic reviews [and scoping reviews]” (Participant 10).

Managing researchers' expectations effectively

Participants mentioned that effectively managing researchers' expectations enabled them to establish an efficient collaboration with the research team and streamlined the review process. One librarian noted that it was a lengthy process to fully grasp their own training, and that investing in continuing education opportunities can “greatly assist in supporting researchers in making informed decisions” (Participant 14). Many participants echoed this viewpoint, stating that it enabled them to guarantee they were “crystal clear on methods” before aiding researchers. This allowed them to clearly state their expectations up front. One participant described that they “[make] clear right up front about the expectations, that's one of the first things that we talk about ... clearly defining my role as an information specialist” (Participant 7).

Many interviewed librarians mentioned that they had “compiled a wealth of resources and preparation materials” that they send to research teams ahead of their meetings, “essentially ensuring that they're adequately prepared before reaching out” (Participant 6). These resources include comprehensive guides to help researchers kick-start their review process including step-by-step instructions on tasks such as checking PROSPERO and searching for published reviews.

In addition to these resources, participants also indicated that they would make it a point to inform ECRs about relevant reporting guidelines such as PRISMA for scoping reviews, ensuring they understand the standards they should adhere to. One participant noted that “while some might argue that certain tasks should have been addressed by their supervisors, I believe it's essential to cover all bases and ensure everyone is on the same page” (Participant 4). This structured approach allows for more efficient use of both the librarian’s and researcher’s time, while ensuring that nothing gets overlooked or rushed during their interactions. The librarians also stressed that providing resources to research teams beforehand helped them understand the scope of the task, sometimes resulting in delays in contacting the librarian by several weeks. Participants suggested that this is indicative of researchers not having been fully prepared for collaborative work or meaningful consultations at an earlier stage.

Interviewees also emphasized the importance of librarians needing to recognize their boundaries when collaborating with research teams on reviews. They identified that this means “not only understanding what they can and cannot teach, but also knowing when to acknowledge that they've reached their limit” (Participant 3). Another participant adds: “There are instances where despite thorough teaching efforts, the message doesn't resonate, perhaps because the individual is steadfast in their approach or receiving conflicting advice from mentors... [and] in such cases, it's important not to expend excessive energy” (Participant 12), as the librarian’s role may have reached its endpoint. Another boundary expressed by participants included recognizing when requests from research teams compromise the integrity of one's work as a librarian. For instance, one participant mentioned that if researchers “insist on omitting crucial terms to reduce the number of articles for screening ... it's imperative to assert one's stance respectfully. Being a good librarian entails knowing when to assertively communicate that certain requests are not feasible due to professional standards” (Participant 1).

Another participant remarked that “librarians may feel intimidated when working with highly educated professionals such as doctors” (Participant 12), but it is essential to recognize the expertise librarians bring to the table. Another librarian mentioned that it’s “protecting yourself and your ... work and your integrity and the pride that you have in your work”. Librarians agreed that it was about asserting oneself confidently and ensuring that the work maintains its integrity and aligns with professional standards, and how standing up for oneself in such situations is crucial.

Clarifying the librarian's role to the researcher

By delineating the role of librarians in knowledge synthesis processes, participants mentioned that they can effectively support researchers in conducting their reviews. It is essential that researchers understand the importance of the scope of a librarian's role and what they can provide in order to understand “[which] topics [are] beyond [their] area of expertise” (Participant 4). A librarian’s strength lies in illustrating effective search methods, participants mentioned, and they will often “share examples of well-crafted searches as benchmarks” (Participant 11). Another participant explained that ECRs are able to understand how challenging it can be to convey the concept when they see tangible examples of constitutes a proficient search (Participant 9). Interviewees agreed that sharing complete projects and showcasing well-written methods sections can be particularly enlightening in this regard.

Certain participants highlighted the significant role of mentoring within a librarian's duties, stressing the need for its explicit recognition, particularly as an increasing number of ECRs are turning to librarians for assistance with systematic and scoping reviews. Participants also mentioned that, with the growing numbers in this regard, it becomes crucial, almost imperative, to recognize and advocate for acknowledgment or authorship when it aligns with the situation. One participant noted that they “recognize the significance of these actions in shaping perceptions of librarians' roles and fostering understanding within the community” (Participant 5). It ensures that librarians are contributing effectively, participants remarked.

Enhancing outreach and promotional approaches

Numerous participants suggested that improving outreach and promotional strategies directed towards ECRs would facilitate engagement with them prior to commencing their reviews, thereby ensuring a strong start. One of the participants mentioned that a highly effective strategy involves implementing “faculty education and reaching out [to] those early career researchers [as they are joining] your academic institution” (Participant 15). Others agreed, as they noted it ensures that the ECRs are aware of the support services available and can plan their research timelines accordingly. One interviewee noted that some ECRs “may not be fully aware of the resources at their disposal, leading to missed opportunities” and suggested that

“implementing streamlined approaches for outreach, perhaps as part of the orientation process, would greatly benefit these researchers” (Participant 11).

Another librarian stated that “the level of support that [librarians] can provide will vary” according to the institution’s resources (Participant 9). While some institutions may have extensive funding and support systems in place, others may have more limited capacity, participants stated. The initial step in supporting ECRs involves faculty outreach and onboarding as integral components of the services offered by libraries, while understanding “it’s crucial to acknowledge that these efforts require additional resources” (Participant 8). Particularly with the pandemic, several librarians mentioned that certain initiatives that “were being done in the past haven’t been done, because so much emphasis was on in-person” and the proliferation of online offerings poses a challenge when attempting to engage with these new hires as many are unaware of the resources available to them, including access to collections, services, and support.

Another important aspect of this support is understanding the library network system within one’s area. While some participants expressed that many librarians are already at full capacity, and generating more business may not be necessary, they agreed that it is crucial to ensure that researchers are aware of their expertise in these areas. One participant stated that if a junior researcher is affiliated with a hospital library, it’s important to determine if there are colleagues who can provide support as “this ensures that they have a network for sharing knowledge and resources” (Participant 8). By showcasing the efforts of fellow librarians from different institutions to early career researchers, it can broaden their access to resources beyond their local environment.

Another approach to enhance the outreach and promotional strategies identified by participants is through networking and leveraging connections with individuals and programs, such as academic directors of residency programs or experienced researchers who mentor younger peers. These connections can serve as avenues for directing researchers to seek librarian assistance or for organizing sessions within labs or research groups. Participant 3 suggested that “if we aim to encourage clinicians to participate in a systematic review methodology class, one solution could be to seek accreditation for the course, enabling participants to earn Continuing Professional Education (CPE) credit”. The same participant also stated that “[librarians] need to get advocates in the professions who’ve worked with a librarian and found them useful ... [such as] the ones who are journal editors” and inquire about the qualities they seek in well-written

manuscripts within their field and the expectations regarding literature searches. By fostering these connections and raising awareness of the role librarians can play in research, librarians can encourage professionals to advocate for opportunities for librarians, facilitating easier partnerships in the future.

Summary for Librarians Phase 2

In Phase 2 of the study, fifteen librarians took part, with fourteen interviewed in English and one in French. Among the participants, eight (53.3%) were affiliated with academic institutions, three (20%) worked in hospital settings, and one (6.7%) was employed by a government agency. All participants stated they were employed full-time as librarians or information specialists during their interviews. Further demographic details were not gathered due to the relatively small size of the medical librarian community and the necessity to uphold confidentiality. Librarians participating in the study highlighted several barriers associated with conducting and instructing SRs and ScRs. These obstacles encompassed various aspects, including an inadequate grasp of how to formulate appropriate research questions, limited time allocated for reviews, a lack of comprehension regarding proper review methodologies among researchers, inadequate understanding of the librarian's role by researchers, and limited time available to thoroughly educate researchers on review methods.

In addition to barriers, librarians also recognized several facilitators to assisting early ECRs in conducting SRs and ScRs. These facilitators encompassed strategies aimed at enhancing collaboration and support between librarians and research teams. They included establishing open and transparent communication channels with PIs and research teams, educating researchers about proper methods for conducting reviews, and receiving mentorship and guidance from experienced colleagues within the field. These facilitators aim to promote effective teamwork and knowledge exchange, ultimately contributing to the successful completion of systematic and scoping reviews by ECRs.

Lastly, in addressing the challenges faced, librarians also proposed several solutions to enhance support for ECRs conducting SRs and ScRs. These solutions involve proactive measures aimed at improving the collaboration between librarians and researchers. They include educating researchers on appropriate methodologies for conducting reviews, effectively managing researchers' expectations, clarifying the role of librarians in the research process, and

enhancing outreach and promotional strategies to better connect with ECRs. By implementing these solutions, librarians aim to empower ECRs with the necessary knowledge and resources to conduct high-quality reviews, ultimately fostering successful research outcomes.

Chapter 6: Discussion and Conclusion

In this chapter, I contextualize the findings of my thesis within established literature. Initially, I provide a concise overview of the primary findings from each segment of my thesis. Subsequently, I delve into a discussion within the context of existing literature on early career researchers (ECRs) and librarians in health professions engaging in systematic reviews (SRs) and scoping reviews (ScRs), alongside librarians guiding ECRs in conducting SRs and ScRs. I then examine the limitations of each phase of my dissertation, followed by a discussion of how my findings contribute to research, theory, and methods. I also explore future research possibilities in this field and present my conclusions.

In Phase 1 of this study, a total of 58 ECRs in health professions participated in a survey, shedding light on the methodological and interpersonal barriers encountered during the execution of SRs and ScRs. Their responses underscored challenges such as search difficulties, critical appraisal hurdles, methodological comprehension gaps, and time management constraints, which were common across both SRs and ScRs. ECRs suggested various strategies to surmount these barriers, including active involvement of librarians and statisticians, efficient time and project management, and fostering open communication within research teams. Interpersonal challenges, such as organizational issues and authorship expectations, further compounded the review process for ECRs. Similarly, 73 librarians involved in the health professions community participated in a survey for Phase 1, revealing methodological and interpersonal barriers encountered while supporting researchers in conducting SRs and ScRs. Methodological barriers encompassed challenges related to student-led reviews without adequate supervision, unrealistic expectations, and misconceptions about the role of librarians. Interpersonal challenges included absentee supervisors, unreliable team members, and misunderstandings about the librarian's workload and expertise. To address these barriers, librarians proposed strategies such as education, expectation management, mentorship, and proactive clarification of roles and expectations.

In Phase 2 of the study, fourteen ECRs participated in interviews, all contributing valuable insights to the exploration of SRs and ScRs, offering valuable insights into the myriad barriers they encountered throughout the review process. These obstacles, ranging from constraints in time allocation to nuanced challenges in methodological understanding, underscored the complex landscape of review endeavors. Notable among these impediments was

the scarcity of dedicated time for conducting reviews, exacerbating the challenges inherent in methodological comprehension and resource availability. Yet, amidst these challenges, ECRs also illuminated various facilitators that significantly bolstered their review efforts. From the availability of resources to fostering robust team dynamics, these facilitators played a pivotal role in navigating the intricate terrain of review completion. Moreover, in tandem with ECR perspectives, fifteen librarians were interviewed for the study, enriching the discourse with their unique insights and experiences. Identifying barriers, librarians echoed similar themes to those voiced by ECRs, emphasizing challenges in research question formulation, time management, and role clarification. Yet, amidst these challenges, librarians also highlighted key facilitators aimed at enhancing collaboration and knowledge exchange. Strategies such as transparent communication channels and mentorship opportunities emerged as critical enablers in fostering successful review endeavors. Proposing solutions to address the identified challenges, librarians underscored the importance of proactive measures in educating researchers, clarifying roles, and strengthening outreach efforts. These solutions, anchored in collaboration and partnership, seek to empower ECRs with the necessary tools and support to navigate the review process effectively, ultimately contributing to the advancement of scholarly knowledge and research outcomes.

This chapter provides a comprehensive examination of the findings of my dissertation within the framework of existing literature on ECRs and librarians in the health professions engaged in SRs and ScRs. By summarizing the primary findings from each phase, I have highlighted the significant methodological and interpersonal barriers faced by both ECRs and librarians, as well as the strategies proposed to overcome these challenges. The insights gathered from surveys and interviews underscore the critical role of librarians in facilitating SRs and ScRs, while also pinpointing areas where further support and clarification are needed. The limitations of each phase are addressed, and the contributions of my findings to research, theory, and methods are discussed. This chapter also outlines potential future research directions, emphasizing the need for continued exploration and support in this field to enhance the efficiency and effectiveness of SRs and ScRs. Through these contributions, this dissertation aims to advance the understanding and practice of systematic and scoping reviews, ultimately benefiting the broader academic and research community.

Integration of my findings with the literature

Early career researchers' findings

There is a scarcity of literature regarding challenges that ECRs in health professions face when conducting SRs and ScRs. A preprint of a scoping review found only 8 studies discussing the challenges faced by ECRs during these review processes in health professions (Ayala et al., 2019). Predominantly, curriculum-based programs such as evidence-based courses and research methods classes have been utilized to assess the success of ECRs in conducting SRs and ScRs, often through grading or publication outcomes (Farrokhyar et al, 2014; Himelhoch, Edwards, Ehrenreich, & Lubber, 2015; Bonfield, Fearnside, & Cramp, 2018). Other studies have employed questionnaires, surveys, and interviews to explore ECRs' experiences in evidence-based practice courses, albeit not explicitly focusing on SRs or ScRs (Anuradha, Jacob, Shyamkumar, & Sridhar, 2013; O'Brien, 2016; Gorczynski, Burnell, Dewey, & Costello, 2017; Panczyk, Cieślak, Zarzeka, Jaworski, & Gotlib, 2018). Only one study specifically interviewed novice health promotion researchers about their involvement in SRs and ScRs (Shepherd, 2013). This lack of direct inquiry into ECRs' experiences with SRs and ScRs represents a significant gap in understanding the challenges and potential solutions for this specific audience.

Overall, 58 ECRs in HPE participated in Phase 1 of this study. Their responses suggest that the largest methodological barriers for SRs include challenges in searching, challenges with critical appraisal, a lack of understanding of proper methods, and time management. These findings are consistent with the literature, where several studies have indicated that searching the literature, particularly developing an adequate search strategy, is both challenging and time-consuming (Bonfield, Fearnside, & Cramp, 2018; Gorczynski et al., 2017; O'Brien et al., 2016). Two studies highlighted the challenge of locating evidence (Anuradha et al., 2013; Shepherd, 2013), while another noted the significant difficulty in interpreting conflicting results and the lack of access to literature (Anuradha et al., 2013). Additional searching tasks that posed problems for study participants included formulating an adequate research question (Gorczynski et al., 2017; O'Brien et al., 2016; Shepherd, 2013) and developing inclusion and exclusion criteria (Gorczynski et al., 2017; O'Brien et al., 2016).

Other methodological challenges identified in the literature include tasks involving data analysis and critical appraisal, where several studies reported difficulties around performing statistical analysis (Anuradha et al., 2013; Bonfield, Fearnside, & Cramp, 2018; Panczyk et al,

2018; Shepherd, 2013), as well as interpreting meta-analysis results (Panczyk et al, 2018). This corresponds with survey results that pinpoint challenges in critical appraisal, such as determining when to utilize a risk of bias tool versus methodological guidelines for reviews.

Research has shown that ECRs lack an understanding of proper methods which could stem from a lack of confidence in their skills (Bonfield, Fearnside, & Cramp, 2018; Panczyk et al, 2018; Shepherd, 2013), a lack of understanding the proper terminology and purpose of reviews (Anuradha et al., 2013; Panczyk et al, 2018), or managing the feasibility and scope of a review (Gorczyński et al., 2017; O'Brien et al., 2016; Shepherd, 2013). This aligns with the survey findings, which identified similar methodological barriers in ScRs, including challenges in searching, a greater lack of experience with ScRs compared to SRs, and a limited understanding of proper ScR methods.

Early career researchers who completed the survey recognized time management as a significant methodological obstacle. Several studies have highlighted that insufficient time to complete projects is a significant issue (Anuradha et al., 2013; Shepherd, 2013). Additionally, many researchers found that the time required to finish reviews often exceeded expectations (Bonfield, Fearnside, & Cramp, 2018; O'Brien et al., 2016). Furthermore, these studies emphasize the importance of having adequate and protected time to complete the work effectively (Himmelhoch et al., 2015).

Respondents to the survey suggested various strategies to tackle the methodological barriers in SRs and ScRs, such as engaging librarians and statisticians, managing time and projects effectively, and fostering regular, transparent communication. These observations align with existing literature, which emphasizes the importance of getting guidance from a librarian in conducting literature searching as essential (Bonfield, Fearnside, & Cramp, 2018). Other studies indicated that having dedicated time for tasks and maintaining rigorous feedback and assessment processes as motivating factors (Farrokhyar et al., 2014; Gorczyński et al., 2017; Himmelhoch et al., 2015). One study mentioned the importance of having a well-rounded team that included members with methodological expertise, a strong project management plan, and open communication, where all team members feel empowered to share their opinion was critical to their success (Bonfield, Fearnside, & Cramp, 2018).

The survey also highlighted interpersonal challenges faced by ECRs engaged in SRs and ScRs including issues such as disorganization, difficulties with team members' availability and

reliability, and managing authorship expectations. Additionally, other interpersonal barriers identified by ECRs conducting SRs comprised of inadequate support from supervisors or mentors, and a perception of ECRs being undervalued. As previously mentioned, ECRs from the survey indicated that inadequate support such as insufficient mentorship support emerged as a barrier in conducting SRs or ScRs. Additionally, various studies have highlighted challenges related to inadequate guidance and mentorship (O'Brien et al., 2016; Shepherd, 2013). Participants also noted that lacking financial support was a challenge. Shepherd (2013) observed that insufficient funding for training hindered ECRs in conducting more effective reviews.

Survey respondents noted some solutions for conducting SRs and ScRs, which were often similar for both methodological and interpersonal aspects. For instance, Bonfield et al. (2018) emphasized the importance of open and transparent communication and a well-rounded research team, highlighting that success was linked to empowering all team members to share their opinions. Respondents also stressed the necessity of open and transparent communication within the research team, mirroring solutions found for methodological barriers. Moreover, effective communication with experienced and responsive faculty and trainers was deemed valuable (Farrokhyar et al., 2014; Gorczynski et al., 2017; Himelhoch et al., 2015). Several studies identified access to mentors as a key facilitator in understanding and successfully completing these studies (Gorczynski et al., 2017; Himelhoch et al., 2015; Shepherd, 2013). Additionally, studies suggested that exposure to a structured training approach and practice-based learning through completing systematic review tasks are crucial for fully understanding the process (Farrokhyar et al., 2014; Himelhoch et al., 2015; Panczyk et al., 2018; Shepherd, 2013). This was also recognized as a solution by survey participants in both the methodological and interpersonal sections.

Throughout the interviews, ECR participants identified several barriers they had also mentioned in the survey when conducting systematic and scoping reviews. These included a lack of dedicated time for reviews and insufficient understanding of proper review methods. As previously noted, several studies have identified insufficient time as a significant issue (Anuradha et al., 2013; Shepherd, 2013; Bonfield, Fearnside, & Cramp, 2018; O'Brien et al., 2016). Additionally, a lack of understanding of proper methods may encompass not fully grasping the terminology and purpose of reviews (Anuradha et al., 2013; Panczyk et al., 2018) or managing the feasibility and scope of a review (Gorczynski et al., 2017; O'Brien et al., 2016;

Shepherd, 2013). Participants also highlighted inadequate resources as another barrier to successfully completing a review.

The participants also identified facilitators that would aid in conducting SRs and ScRs. These included a strong team characterized by robust organization and cohesion, as mentioned in the survey, as well as sufficient resources to ensure the successful completion of a review. Anuradha et al. (2013) identified that access to electronic resources and scientific databases facilitated the undertaking of systematic and scoping reviews. Meanwhile, Himelhoch and colleagues (2015) emphasized the importance of support from program directors, particularly in providing protected time for faculty and students to complete their projects.

Lastly, they also identified potential solutions for librarians to better support ECRs when conducting SRs and ScRs, including teaching ECRs about appropriate methods for conducting reviews, clarifying the librarian's role to the researcher, and enhancing outreach and promotional approaches. Several studies indicated that having background knowledge and training in research methods, epidemiology, and statistics (Farrokhyar et al., 2014; Shepherd, 2013), as well as training in literature searching (Himelhoch et al., 2015) and critical appraisal (Anuradha et al., 2013) are considered of particular benefit. Several studies also reported that having a pre-defined protocol to apply selection criteria with confidence was also advantageous (Bonfield, Fearnside, & Cramp, 2018; O'Brien et al., 2016). The roles that librarians play in training ECRs in comprehensive searching methods required for SRs and ScRs are well documented (Bonfield, Fearnside, & Cramp, 2018; O'Brien et al., 2016). Librarians can significantly impact research by educating researchers on proper reporting practices and advising on the most suitable methodologies for their research questions (Edmunds Otter, Wright, & King, 2017; Heimlich, 2014; Meert, Torabi, & Costella, 2016). And with research waste becoming an increasing concern (Simera et al., 2010), librarians contribute to addressing this issue by advocating for research integrity and transparency (Kirtley, 2016).

Librarians' findings

Unlike the limited research on the challenges that ECRs face when conducting SRs and ScRs, there is a wealth of literature on the involvement of librarians in these processes. Librarians play a crucial role in the execution of SRs and ScRs, contributing their expertise in information retrieval, database management, and methodological rigor. Their involvement spans

various stages of the review process, from formulating precise search strategies and conducting comprehensive literature searches to managing citations and ensuring adherence to established review protocols. By leveraging their specialized knowledge, librarians enhance the quality and efficiency of SRs and ScRs, ensuring that the resulting evidence syntheses are thorough, reproducible, and reliable. Their collaboration with researchers not only streamlines the review process but also elevates the overall standard of academic inquiry.

Overall, 73 librarians working with health professions participated in Phase 1 of this study. Their responses highlighted the primary methodological barriers to conducting systematic reviews (SRs), including navigating unrealistic expectations, researchers or research teams not understanding the librarian's role, and issues related to authorship. Several studies have examined the challenges librarians face when collaborating with researchers on SRs and scoping reviews (ScRs), such as a lack of awareness about feasibility, including time constraints and methodological knowledge (Nicholson, McCrillis & Williams, 2017; Spencer & Eldredge, 2018; O'Dwyer & Watford, 2021). O'Dwyer and Watford (2021) also noted that some research teams resist adding librarians as co-authors, despite many librarians meeting the International Committee of Medical Journal Editors standards for co-authorship. Additionally, respondents to my survey indicated that the increased workload from simultaneously teaching and consulting was another methodological barrier, echoing Nicholson and colleagues' (2017) findings of difficulty balancing SR work with other professional duties, such as teaching.

Librarians in my survey identified several strategies to overcome these barriers, including educating researchers, managing expectations, ensuring good documentation, and providing mentorship. A case study by O'Dwyer and Watford (2021) highlighted these strategies within their library's support services for SRs. They emphasized effective communication approaches employed by librarians to address challenges faced when working with research teams. These strategies involved raising awareness of potential pitfalls to help teams understand the impracticality of overly broad review questions, explaining the time expectations for drafting and creating a search strategy (typically 2-4 weeks, depending on the team's responsiveness), and an additional 2-4 weeks for searching databases and removing duplicates. The authors noted that effective communication with research teams, though consistently challenging, is a crucial competency for librarians that keeps SR projects progressing. These findings align with previous studies on this topic (Nicholson, McCrillis & Williams, 2017; Townsend et al., 2017). In fact,

Nicholson and colleagues (2017) emphasized that clarifying the roles of each individual involved in the project led to more successful project outcomes. Another similar facilitator highlighted by librarians in the survey included negotiating authorship in advance. Many studies have found that having a librarian co-author contributes to higher quality search strategies in SRs (Koffel, 2015; Meert, Torabi & Costella, 2016; Rethlefsen et al., 2015; Schellinger et al., 2021). Librarian involvement in SRs not only improved search strategies, but also improved reporting processes, as these reviews tend to score higher on reporting elements of the review (Meert, Torabi & Costella, 2016). Rethlefsen and colleagues (2015) found that SRs with librarians as co-authors used more methods to reduce bias than reviews that only mentioned a librarian as a contributor or did not include a librarian at all.

One of the interpersonal barriers identified by librarians in my survey conducting SRs included supervisors of students who were absent or not available, a lack of reliability and/or availability of team members, and the lack of experience on behalf of the research team. It is arguably impossible for the average graduate student to complete a high-quality review in a single semester, reflecting the findings from a survey by Nicholson and colleagues (2017), which reported that researchers often lacked a complete understanding of the SR process, particularly when working with unsupervised students. Respondents from my survey also expressed frustration at being expected to train students, often with insufficient time and support from students' supervisors and other members of the research team. Another barrier identified by librarians in my survey was the researchers' lack of understanding regarding the librarian's role and workload. Despite systematic review searching being a substantial task for many librarians and knowledge professionals, it is often seen as invisible labor due to the lack of recognition it receives. This can manifest through the omission of authorship credit for librarians who contribute intellectually to search development, or through the devaluation of the search process by the language used to describe it (Ross-White, 2021). A survey by Bloss et al. (2022) revealed that librarians often experience negative emotions when requesting authorship, which leads to feelings of being undervalued by researchers. However, when librarians receive support and encouragement from their supervisors, research communities, and workplaces, they produce a greater number of higher-quality articles and publications.

One strategy to overcoming these barriers identified by librarians in the survey have included providing mentorship to researchers including graduate students. Pickering and

colleagues (2015) stated that SRs is a “relatively simple and inexpensive entry point for students to enter the scholarly conversation in their chosen disciplines *under the guidance of a mentor*” [emphasis added]. It also helps them become well-versed in published literature, various research methods, statistical analysis, and critical appraisal (Peacock & Forbes, 2004). Hanneke (2018) noted that SRs allow students to contribute intellectually to their fields without the extensive resources often required for other research projects. Additional facilitators mentioned include managing expectations, building relationships with principal investigators, and clarifying the librarian’s role from the outset. These findings align with those of Nicholson and colleagues (2017), who highlighted that the most effective strategies involved clear and frequent communication with the research team, defining the librarian’s role early on, and providing detailed consultations as needed.

My survey identified similar methodological barriers for scoping reviews (ScRs) as for systematic reviews (SRs), including students conducting SRs as coursework or as part of their thesis without supervision, and the research team's lack of experience, both of which have been addressed in the literature above. A unique barrier identified for ScRs was the searching restrictions imposed by the research team. O’Dwyer and Watford (2021) observed that when researchers do not understand the process, fail to provide constructive feedback to the librarian, or do not respond to requests regarding search terms, it becomes especially challenging for the librarian to develop an effective search strategy. This iterative process relies on ongoing communication between the research team and the librarian. Nicholson and colleagues (2017) also noted that a lack of feedback on proposed search strategies and insufficient follow-up after the search was executed posed significant problems. Similar strategies to overcome these barriers in ScRs as in SRs included managing expectations, librarians providing mentorship to researchers, educating researchers, and holding frequent meetings with the research team. These findings have also been well documented in the preceding sections of this chapter.

Librarians in my survey conducting ScRs identified several interpersonal barriers, including the absence or unavailability of student supervisors, the unreliability and/or unavailability of team members, researchers not understanding the role and/or workload of the librarian, and the inexperience of the researcher and/or research team. Strategies to overcome these barriers, as identified by librarians, include managing expectations and establishing

relationships with principal investigators. Many of these strategies have also been well documented in the earlier sections of this chapter.

In the interviews, librarian participants highlighted various methodological and interpersonal barriers they faced when conducting and teaching systematic and scoping reviews, which aligned with the survey responses. These barriers included insufficient dedicated time for reviews, researchers' lack of understanding of proper review methods, researchers' lack of understanding of the librarian's role, and inadequate time to effectively instruct researchers on review methods. One barrier identified more prominently in the interviews than in the survey was researchers' inadequate understanding of how to formulate appropriate research questions. O'Dwyer and Watford (2021) noted that librarians frequently encounter overly broad review questions or topics that lack specific research questions at the onset of a review. Similarly, Nicholson et al. (2017) identified that among the top five challenges faced by librarians, the two most significant were unclear, unanswerable research questions and research questions defined too broadly. Both studies suggested strategies to help researchers overcome these challenges, such as discussing key points to emphasize the importance of a focused review question and the feasibility of their study. These points included: a) broad questions generate a massive number of results requiring extensive title/abstract screening; b) numerous studies may meet the inclusion criteria, necessitating full-text screening and risk of bias assessments; and c) broad questions may not be attractive to the targeted journal. By addressing these discussion points with researchers, librarians can often help them understand the impracticality of broad review questions.

There were other facilitators identified by the librarians interviewed including ensuring open and clear communication with the PI and research team, teaching researchers about appropriate methods for conducting reviews, and receiving mentorship from colleagues. One study found that asking more experienced colleagues for advice was a huge advantage in their toolkit (Nicholson, McCrillis & Williams, 2017). The other facilitators were previously discussed in other sections of this chapter. Lastly, the interviewed librarians also identified possible solutions for librarians to better help support ECRs when conducting SRs and ScRs, including educating researchers on appropriate review methodologies, managing researchers' expectations effectively, clarifying the librarian's role to the researcher, and enhancing outreach and promotional approaches. McKeown and Ross-White (2019) discovered that promoting their

knowledge synthesis service through various channels—such as faculty newsletters, social media posts, continuous student and resident library orientations, presentations to faculty's Academic Council and medical residency program directors, and a research guide—led to an overwhelming demand for the service.

Reflective Synthesis: Bridging Detailed Findings and Generalized Principles

Both ECRs and librarians face similar barriers and facilitators when conducting SRs and ScRs. Common barriers include a lack of dedicated time, inadequate understanding of proper review methods, and insufficient clarity on the role of each party involved. For ECRs, these barriers often stem from limited experience and supervision, while for librarians, they arise from unrealistic expectations and lack of recognition of their expertise by the research team. Facilitators for both groups include effective communication, mentorship, and clear role definition. Librarians often provide critical support to ECRs by educating them on review methods, managing expectations, and offering ongoing guidance. In both cases, establishing strong relationships with principal investigators and maintaining regular communication are key strategies that enhance the success of SRs and ScRs. Despite their different roles, both ECRs and librarians benefit from structured approaches that emphasize collaboration and mutual understanding of the review process.

Structured approaches that foster collaboration and mutual understanding between ECRs and librarians in the context of SRs and ScRs are essential to overcoming common barriers and optimizing the review process. These approaches encompass several key strategies designed to enhance clarity, coordination, and efficiency. First, the use of standardized review protocols and templates plays a critical role in ensuring alignment on research objectives, methodologies, and the specific roles of each team member from the outset. Additionally, the implementation of collaborative project management tools—such as Trello, Asana, or PRISMA flowcharts—facilitates the organized tracking of tasks, timelines, and milestones while promoting transparency and accountability throughout the process. Joint training sessions and workshops focused on SR/ScR methodologies are also invaluable, as they not only bridge knowledge gaps but also cultivate a shared understanding of best practices and review standards among ECRs and librarians. Further, the adoption of role and responsibility checklists ensures that each contributor's duties are clearly defined, thereby preventing miscommunications and managing

expectations effectively. Equally important is the establishment of structured communication plans, which include scheduled check-ins, regular progress meetings, and the use of shared platforms like Slack or Teams to facilitate consistent updates and streamlined information flow. Collectively, these structured approaches serve to reinforce collaborative efforts, clarify responsibilities, and ensure a methodical, coordinated, and ultimately successful review process. In contrast, while both ECRs and librarians face challenges in conducting SRs and ScRs, their barriers and facilitators differ significantly due to their distinct roles and levels of experience. ECRs frequently grapple with a lack of experience and specialized knowledge in review methodologies, which can significantly impact their ability to conduct SRs and ScRs effectively. This inexperience can manifest in several key areas. For instance, ECRs may struggle to formulate clear and focused research questions, which are essential for guiding the review process and ensuring that the research objectives are met. The formulation of well-defined research questions requires a deep understanding of the field and the specific issues at hand, skills that may still be developing for ECRs. Additionally, ECRs may face challenges in executing comprehensive literature searches. This involves not only identifying and accessing a wide range of relevant sources but also utilizing advanced search strategies and tools to capture all pertinent studies. The complexity of this task can be daunting for those who are not yet fully familiar with the intricacies of database searching and systematic review protocols. Performing critical appraisals of the included studies is another area where ECRs may encounter difficulties. This process requires evaluating the quality and relevance of the studies, which involves understanding and applying various appraisal criteria and methods. Inadequate expertise in this area can lead to incomplete or biased assessments, ultimately affecting the reliability and validity of the review findings. Moreover, the absence of adequate supervision and mentorship further exacerbates these challenges. Without experienced mentors to provide guidance and feedback, ECRs may struggle with navigating the complexities of the review process. Effective supervision is crucial for helping ECRs develop their skills, address methodological issues, and refine their approach to conducting reviews. The lack of such support can hinder their progress, lead to mistakes, and diminish the overall quality of the review work. Providing structured mentorship and resources is essential to support ECRs in overcoming these barriers and developing proficiency in conducting high-quality systematic and scoping reviews.

Addressing the challenges faced by ECRs in conducting SRs and ScRs involves implementing several key facilitators and solutions. One essential facilitator is the provision of structured training, and workshops specifically focused on review methodologies. Institutions should organize comprehensive training programs that cover critical skills such as formulating research questions, conducting thorough literature searches, and performing rigorous critical appraisals. These training sessions should be led by experienced researchers, librarians, or review methodologists who can offer hands-on guidance and support. Additionally, formal mentorship programs can greatly benefit ECRs by pairing them with seasoned researchers or review experts. This mentorship provides personalized support, helping ECRs navigate methodological challenges, refine their research questions, and enhance their appraisal techniques.

Furthermore, access to high-quality resources and advanced search tools is crucial. Institutions must ensure that ECRs have access to comprehensive databases, review management software, and other research tools, along with adequate training on their effective use. Collaborative research groups also play a significant role, as they allow ECRs to work alongside more experienced researchers, librarians, or research teams, facilitating knowledge sharing and collaborative problem-solving. Clear guidelines and standardized protocols should be developed and made available to provide ECRs with a structured approach to conducting reviews. Regular check-ins and feedback sessions with supervisors or mentors can help ECRs stay on track and address issues early. Finally, providing dedicated time and support for review work, separate from other responsibilities, can help alleviate the burden on ECRs, allowing them to focus on their review tasks more effectively. By implementing these facilitators and solutions, institutions can enhance the ability of ECRs to conduct high-quality SRs and ScRs, thereby advancing their research capabilities and contributing to the overall success of their projects.

Conversely, librarians, though typically more experienced in these methodologies, encounter barriers related to the perception and understanding of their role by researchers. Librarians often face unrealistic expectations, insufficient acknowledgment of their expertise, and the challenge of balancing multiple responsibilities, such as teaching and consulting. To foster a more supportive and appreciative culture, institutions must take deliberate steps to address these issues. This involves setting realistic and achievable expectations for librarians, ensuring that their contributions are recognized and valued within the academic and research communities. Institutions should actively work to promote a culture of respect by regularly

acknowledging the critical role librarians play in the research process and highlighting their expertise in various forums.

Additionally, providing librarians with targeted professional development opportunities can enhance their skills and bolster their capacity to meet diverse demands. Institutions should also consider implementing policies that offer better work-life balance and adequate resources to manage their multiple responsibilities effectively. This may include allocating specific time for research and consultation activities, reducing administrative burdens, and offering support for continued education and training. Institutions must also allocate adequate manpower to support librarians in their roles. This includes hiring sufficient staff to distribute workloads effectively, thereby allowing librarians to focus on their core responsibilities without being overwhelmed by administrative tasks or competing priorities. Ensuring a balanced distribution of work and providing support for continued education and training are essential. By creating an environment where librarians' expertise is celebrated, their contributions are integrated into the research process, and their workload is managed effectively, institutions can cultivate a culture that not only supports but also optimizes the valuable role librarians play in academic success and research advancement.

Facilitators for ECRs in conducting systematic reviews (SRs) and scoping reviews (ScRs) often include targeted mentorship and educational support from experienced researchers and librarians. This support is crucial for building ECRs' methodological skills and confidence. Experienced researchers and librarians can provide guidance on complex review methodologies, helping ECRs to formulate precise research questions, conduct comprehensive searches, and perform critical appraisals with greater competence. The educational support from librarians, in particular, offers ECRs access to specialized knowledge and resources that enhance their review processes. On the other hand, librarians benefit from facilitators that include the establishment of clear communication channels and the setting of expectations early in the review process. By negotiating their roles and contributions, librarians can ensure their expertise is appropriately recognized and integrated into the research team. This includes discussions around authorship and the acknowledgment of their methodological contributions. For librarians, being acknowledged as essential methodological experts is not only a matter of recognition but also of professional integration and respect within the research team. The connections between ECRs and librarians highlight a symbiotic relationship where ECRs gain valuable knowledge and

experience through the support of librarians, while librarians thrive on being recognized and valued as key contributors to the review process. Effective collaboration between ECRs and librarians fosters a more efficient and productive review process, leveraging the strengths of both groups to achieve high-quality research outcomes.

The generalizability of the results related to facilitators for ECRs and librarians in conducting SRs and ScRs extends broadly across different research contexts. For ECRs, the facilitators identified—such as targeted mentorship and educational support—are relevant across various fields and types of reviews. Regardless of the specific research domain, ECRs typically benefit from structured guidance on review methodologies, access to training resources, and support in developing critical appraisal skills. These needs are consistent in diverse research environments, making the findings broadly applicable. Similarly, for librarians, the necessity for clear communication channels, well-defined roles, and appropriate recognition is pertinent across a range of research settings. Librarians face similar challenges in integrating their expertise and ensuring their contributions are valued in different institutional or project contexts. The importance of establishing clear expectations and negotiating roles is a common requirement in collaborative research efforts, demonstrating the broader applicability of these strategies.

Moreover, the results highlight the broader implications for research collaboration. The principles of effective collaboration, mutual respect, and acknowledgment of expertise are not limited to specific research projects or disciplines. These principles are fundamental to successful research partnerships and can enhance teamwork across various settings. Institutions can leverage these findings to develop policies and practices that support both ECRs and librarians more effectively. For example, creating formal mentorship programs, providing access to training resources, and establishing clear communication protocols can improve research outcomes in diverse research environments. Overall, the generalizability of these results underscores the fundamental aspects of effective mentorship, collaboration, and recognition in research. These principles are applicable across different research environments and institutions, promoting better support and integration for both ECRs and librarians in their respective roles.

Limitations

Geographically, the roles and opportunities for ECRs and health librarians and conducting SRs and ScRs vary significantly between developed and developing countries.

Differences in access to resources, infrastructure, and professional support shape their experiences. In developed countries, well-funded institutions, comprehensive training programs, and robust professional networks provide strong support for advanced research. In contrast, those in developing countries face resource limitations, broader responsibilities, and restricted access to training, often requiring creative solutions and external partnerships to overcome these challenges and contribute effectively to evidence synthesis efforts.

For librarians in developed countries, they typically benefit from well-funded institutions with extensive access to databases, specialized software, and key journals. These resources allow them to provide high-level support for evidence synthesis projects and contribute significantly to research initiatives. Additionally, they have greater access to professional development opportunities, including workshops, certifications, and international conferences, which further enhance their skills and expertise. Collaboration within well-established research networks also allows for involvement in multi-institutional projects and the ability to co-author publications.

In contrast, librarians in developing countries often face resource limitations, including restricted access to essential databases and limited funding for professional development. Training opportunities may be scarce, with fewer local programs and limited chances to attend international events. As a result, these librarians frequently rely on self-learning or external partnerships to enhance their skills. Their roles tend to be broader, encompassing not only support for SRs and ScRs but also general library duties such as collection management and user training. They may also take on advocacy roles, promoting evidence-based practices in environments where such approaches are still gaining traction.

The disparity extends to research and publishing opportunities as well. Librarians in developed countries are more likely to engage in research, publish in high-impact journals, and contribute to methodological advancements in SRs and ScRs. In contrast, those in developing regions may encounter challenges like high publication fees and limited access to publishing platforms, though growing interest in global health creates opportunities to contribute perspectives from resource-limited settings. Additionally, technological access differs greatly; librarians in developed countries usually have cutting-edge tools and high-speed internet, while those in developing countries often work with outdated software and slower internet speeds, relying on open-source tools to complete their tasks.

Overall, while academic health librarians in both settings share the goal of supporting SRs and ScRs, their roles are shaped by different challenges and opportunities. Librarians in developed countries typically work in resource-rich environments that allow them to focus on specialized tasks, advanced methodologies, and research. On the other hand, librarians in developing countries must navigate broader responsibilities and resource constraints while often playing crucial roles in capacity building and promoting evidence-based practices in their regions.

Many of the challenges and opportunities experienced by academic health librarians conducting SRs and ScRs also apply to ECRs in the health professions, though with some important distinctions. ECRs in developed countries benefit from greater access to resources, such as databases, journals, and specialized software, as well as more opportunities for training and skill development through workshops, mentorship, and conferences. Conversely, ECRs in developing countries often face limited access to these resources, which can affect the quality and comprehensiveness of their reviews. Training opportunities in these settings may also be scarcer, with ECRs relying more on self-directed learning or seeking support through international initiatives.

For ECRs, mentorship and institutional support play critical roles, especially when navigating the complexities of SRs and ScRs. In developed countries, established networks and experienced mentors can provide valuable guidance and research opportunities. In contrast, ECRs in developing countries might have fewer experienced mentors in evidence synthesis, requiring them to seek support from external networks or online resources. Additionally, ECRs in developing countries often face broader responsibilities within their institutions due to limited staffing, making it harder to focus on conducting high-quality reviews. This can significantly impact their career progression and ability to engage in in-depth research.

Despite these differences, ECRs in both settings share the common goal of contributing to evidence synthesis, though their paths may diverge due to disparities in funding, infrastructure, and access to professional networks. ECRs in developed countries typically benefit from better access to grants and research support, which can accelerate their career progression. Meanwhile, ECRs in developing countries may encounter more barriers to securing funding and publishing, although there are growing opportunities for them to highlight context-specific insights, particularly in global health. Overall, while the foundational challenges are

similar, ECRs in developing countries often need to navigate additional complexities that shape their research and professional growth.

Maintaining a consistent conceptual framework throughout a study, as was the case with my thesis where the framework did not change, provides clarity and focus but also presents potential limitations. A fixed framework may limit the study's adaptability to new developments or emerging trends in the field, potentially missing out on incorporating relevant new concepts or methods. This rigidity can lead to overlooking important variables or factors, constrain the interpretation of data, and create a misalignment with actual findings if they diverge from the original framework. To address these issues, it is crucial to periodically review the framework in light of new evidence and insights, allowing for some flexibility and openness to adjustments, should my conceptual framework be used in the future. Engaging with current literature and incorporating feedback can help ensure that the framework remains relevant and aligned with the evolving research context, thereby enhancing the study's robustness and depth.

Limitations of Phase 1 – Survey

I decided to survey two ECR groups in English and French using two listservs, the Early Career Medical Educators (ECME) listserv and the Association for Medical Education in Europe (AMEE) listserv. The response rate was 3.8%, which may be viewed as a limitation. Both Creswell (2012) and Dillman (2000) recommended aiming for a 50% response rate for surveys. Babbie (2008) considered a 50% response rate sufficient for analysis, though he suggested that a 70% rate would be ideal. However, despite employing Dillman's Tailored Design Method, the response rate remained low. The listservs indicated above both reached ECRs across various domains of health professions education, not just those engaged in conducting SRs and ScRs. Therefore, the limited response rate may be due to the inclusion of ECRs who are not involved in these types of reviews.

Similarly, I also decided to survey two health sciences librarian groups in English and French using two listservs, the Canadian Health Libraries Association (CHLA) listserv and the Medical Libraries Association (MLA) listserv. The response rate was 7.3%, which may be viewed as a limitation. Along similar reasonings as those mentioned for ECRs, the listservs reached out to health sciences librarians across various domains of health librarianship, not

solely those engaged in conducting SRs and ScRs. Hence, the limited response rate might be attributed to the inclusion of librarians who aren't involved in these types of reviews.

My survey utilized self-reported data to assess the levels of experience and knowledge with SRs and ScRs among ECRs and librarians. The subjective nature of these self-reported measures introduces variability, as each respondent's interpretation of their experience and expertise can differ significantly. While this approach allows for personal insights into their capabilities and confidence levels, it also means that the data collected is inherently subjective and may not fully capture objective measures of proficiency or skill. Respondents provided feedback indicating that some of the closed-ended questions in the survey were perceived as too rigid or leading, which may have influenced their responses. For example, some questions may have contained wording or implications that respondents felt did not accurately reflect their views or experiences. This feedback highlights a potential issue with the survey design, where the phrasing of questions might lead to misinterpretation or force responses into categories that do not align well with the respondents' true experiences.

Despite the survey being reviewed for clarity by two colleagues from both the ECR and librarian communities, these issues still emerged. This suggests that even with expert input during the review process, some questions might still be interpreted in varied ways by respondents, emphasizing the challenges of crafting survey instruments that effectively capture nuanced information without introducing bias or misunderstanding. The feedback underscores the importance of ongoing refinement in survey design to ensure that questions are clear, unbiased, and able to capture the diverse experiences and perspectives of all respondents.

As previously noted, the Phase 1 surveys included both closed- and open-ended questions. This approach provided insights into the barriers ECRs encounter when conducting SRs and ScRs, along with some of their suggested solutions. Additionally, the survey for health librarians highlighted the challenges they face in conducting and instructing SRs and ScRs and offered some suggested solutions. This information prepared me for the Phase 2 interviews, where I discussed with ECRs and health librarians the facilitators and potential solutions to the barriers identified in Phase 1.

Limitations of Phase 2 - Interviews

In Phase 2 of the study, I conducted one-on-one semi-structured interviews with ECRs and health librarians who had expressed their willingness to participate after completing their

respective surveys. This approach aimed to deepen the insights gained from Phase 1 by providing more nuanced and detailed information through direct dialogue. The interviews provided valuable self-reported data reflecting the participants' personal experiences and perspectives on conducting SRs and ScRs.

However, several factors may have influenced the data obtained from these interviews. Notably, because I am a health librarian, ECR participants were more inclined to focus on barriers, facilitators, and solutions related to librarian involvement in SRs and ScRs. This emphasis might have led to an underrepresentation of other relevant barriers or challenges where librarian involvement was less central. As a result, the perspectives shared during the interviews may not fully capture the range of difficulties faced by ECRs, particularly those related to aspects of the review process outside the scope of librarian support.

Furthermore, the interviewed ECRs were primarily physicians and health professions education (HPE) professionals, which may limit the generalizability of the findings to other health professions such as nursing or rehabilitation. Their experiences and insights are valuable but may not encompass the diverse challenges faced by professionals in different fields. Additionally, I did not collect detailed demographic information for health librarians beyond what was provided in the survey, in order to maintain confidentiality within this small professional community. This choice means that the perspectives shared by health librarians, some of whom had extensive experience with SRs and ScRs, may differ significantly from those of ECRs who typically have less experience in these areas. Consequently, the data from Phase 2 should be interpreted with these contextual limitations in mind, acknowledging the potential for variability in experiences and perspectives across different professional roles and levels of experience.

Contributions of my findings to research, methods, and theory

My findings contribute to research, methods, and theory in the context of ECRs and librarians conducting SRs and ScRs in health professions education. In terms of research, my work provides a comprehensive framework that enhances the understanding and application of SRs and ScRs, promoting rigorous and contextually relevant investigations in health professions education. Methodologically, it introduces innovative approaches that enhance the reliability and validity of SRs and ScRs, thereby improving their effectiveness in shaping educational practices,

policies, and evidence-based guidelines. Theoretically, this study fills a critical gap by integrating a pragmatic paradigm, highlighting the necessity of practical relevance alongside strong theoretical underpinnings. For ECRs and librarians, these contributions offer accessible and practical tools to overcome common challenges, streamline the review process, and produce high-quality, impactful research.

Contributions of my findings to research

My study highlights several key areas that need attention to improve the practice of SRs and ScRs among ECRs in health professions and librarians. These areas include:

Methodological Training and Support

- **Search Strategies:** ECRs frequently encounter difficulties with developing effective search strategies. Providing more comprehensive training and resources in this area is essential.
- **Critical Appraisal:** Enhancing understanding and skills in critical appraisal methods can help ECRs better assess the quality of studies.
- **Methodological Understanding:** Addressing gaps in methodological comprehension through targeted education and mentorship.

Time Management and Resource Allocation

- **Dedicated Time for Reviews:** ECRs often struggle with time management and the allocation of sufficient time for conducting reviews. Institutions need to recognize the time-intensive nature of SRs and ScRs and provide adequate support.
- **Resource Availability:** Ensuring that ECRs have access to necessary resources, such as databases and software tools, is crucial for facilitating their research efforts.

Role of Librarians

- **Clarification of Librarian Roles:** Misconceptions about the role of librarians can lead to unrealistic expectations. Clearly defining and communicating the roles and expertise of librarians can improve collaboration.
- **Enhanced Collaboration:** Fostering stronger partnerships between ECRs and librarians can enhance the review process. Librarians can offer valuable support in areas like search strategy development and resource management.

Interpersonal and Organizational Challenges

- **Team Dynamics:** Issues such as absentee supervisors and unreliable team members can hinder progress. Promoting open communication and effective team management strategies can mitigate these challenges.
- **Authorship and Organizational Issues:** Clear policies and expectations around authorship and team roles can prevent conflicts and enhance productivity.

Educational and Mentorship Programs

- **Training Programs:** Developing workshops, online courses, and mentorship opportunities focused on SR and ScR methodologies can build ECRs' competencies.
- **Expectation Management:** Educating both ECRs and librarians about the realistic expectations and roles in the review process can lead to more effective collaborations.

Proactive and Transparent Communication

- **Communication Channels:** Establishing transparent and efficient communication channels between ECRs, librarians, and supervisors can address many interpersonal barriers.
- **Mentorship Opportunities:** Providing mentorship opportunities where experienced researchers guide ECRs through the review process can be invaluable.

Implementation of Findings

- **Application of Evidence:** Developing frameworks that facilitate the practical application of synthesized evidence in educational and clinical settings can enhance the impact of SRs and ScRs.
- **Outcome Measurement:** Studying the impact of these reviews on educational practices and patient outcomes to demonstrate their value.

By addressing these highlighted areas, institutions can support ECRs and librarians more effectively, enhancing the quality and impact of SRs and ScRs in health professions education. This comprehensive support framework aims to improve methodological rigor, foster effective collaboration, and ultimately contribute to advancing scholarly knowledge and research outcomes.

Contributions of my findings to methods

The study contributes significantly to the understanding of methods in the field of SRs and ScRs in HPE by providing empirical evidence on the barriers and facilitators experienced by ECRs and librarians. This contribution is particularly notable given the current scarcity of such evidence. The key areas in which this study advances the field are as follows:

Empirical Evidence on Barriers and Facilitators

- **Identification of Barriers:** The study systematically identifies methodological and interpersonal barriers faced by ECRs, such as search strategy difficulties, critical appraisal challenges, and time management issues. Similarly, it highlights the unique challenges librarians face, including misconceptions about their roles and inadequate supervision for student-led reviews.
- **Proposed Solutions:** By providing practical solutions to these barriers, such as the involvement of librarians and statisticians, better time management practices, and clear role definitions, the study offers actionable guidance for future researchers.

Role of Librarians in SRs and ScRs

- **Clarification of Librarian Roles:** The study sheds light on the critical roles that librarians play in supporting SRs and ScRs, while also addressing the unique challenges they face. This includes managing unrealistic expectations and dealing with absentee supervisors.
- **Strategies for Support:** Proposals for strategies such as education, expectation management, mentorship, and proactive role clarification can help optimize the support librarians provide to ECRs.

Mixed Methods Approach

- **Usefulness of Mixed Methods:** The study employs a mixed methods approach, combining surveys and interviews with both ECRs and librarians. This approach allows for a comprehensive understanding of the challenges and solutions from multiple perspectives.
 - **Surveys:** Quantitative data from surveys help identify common barriers and strategies across a larger sample.
 - **Interviews:** Qualitative insights from interviews provide depth and context to the survey findings, revealing nuanced challenges and potential facilitators.

Guidance for ECRs and Librarians

- **Practical Guidance:** By synthesizing the findings, the study offers important guidance for ECRs and librarians before they undertake SRs or ScRs. This includes detailed descriptions of potential barriers and practical solutions to overcome them.
- **Enhanced Collaboration:** The recommendations for enhancing collaboration, such as establishing clear communication channels and fostering robust team dynamics, can improve the efficiency and effectiveness of review processes.

Contribution to Methodological Literature

- **Filling the Evidence Gap:** The study fills a significant gap in the methodological literature by providing detailed evidence on the barriers and facilitators in conducting SRs and ScRs. This evidence can inform the development of more effective training programs and support systems.

Overall, this study not only identifies and addresses the barriers faced by ECRs and librarians but also provides practical solutions and highlights the critical role of mixed methods research in understanding these challenges. This contributes to the advancement of methods in health professions education by offering evidence-based guidance and paving the way for future research and practice improvements.

Contributions of my findings to theory

Pragmatism as an epistemology, with its emphasis on practical consequences and real-world applicability, offers a valuable framework for conducting SRs and ScRs. This approach prioritizes methods and outcomes that are useful and relevant to stakeholders, including researchers, practitioners, and policymakers. For ECRs and librarians, adopting a pragmatic epistemological stance can significantly enhance the quality and impact of their reviews.

My study makes theoretical contributions by addressing the gap in the literature regarding the application of a pragmatic paradigm to SRs and ScRs. While numerous guidelines have been published identifying theories to enhance SRs and ScRs, few studies have explicitly adopted a pragmatic approach. By incorporating pragmatism, I underscore the importance of practical consequences and real-world applicability in the design and implementation of these reviews.

This approach challenges the traditional reliance on purely theoretical or methodological frameworks, encouraging a balance between theory and practice.

Practically, my study holds the potential to improve the methodologies of systematic and scoping reviews, thereby enhancing patient care, policy, and practice. Enhanced review methodologies result in more reliable and valid findings, which can directly inform clinical guidelines, healthcare policies, and evidence-based practices. By grounding reviews in robust theoretical frameworks and practical applications, my research addresses common challenges and barriers encountered by ECRs, as navigating the complexities of SRs and ScRs can be daunting. My study provides a valuable framework that simplifies these processes, making them more accessible and manageable. This, in turn, encourages more rigorous and high-quality reviews, fostering a culture of excellence in research. By highlighting practical strategies and theoretical considerations, researchers are equipped with the tools they need to conduct effective and impactful reviews, ultimately contributing to the advancement of knowledge and the improvement of health outcomes.

Moreover, my findings emphasize the necessity of integrating diverse theoretical perspectives to strengthen the foundation of SRs and ScRs. This integration fosters a more comprehensive understanding of the phenomena under review, allowing researchers to draw more robust and actionable conclusions. By advocating for a pragmatic paradigm, I contribute to the ongoing discourse on how best to ground SRs and ScRs in both theory and practice, promoting a more nuanced and flexible approach to research synthesis.

Future research

My study contributes to this evolving field by providing ECRs in health professions with the tools and methodologies needed to explore and develop tailored approaches to knowledge synthesis. By integrating qualitative research and advanced technologies like artificial intelligence and big data analytics, my study aims to improve the efficiency and impact of SRs and ScRs. Additionally, it emphasizes the importance of interprofessional collaboration, engaging multiple health professions and stakeholders to address complex health issues comprehensively. Incorporating patient perspectives and real-world evidence ensures that reviews are aligned with patient needs and clinical practice. By focusing on these areas, my

study supports ECRs in producing high-quality, impactful reviews that advance clinical practice and improve patient outcomes.

Early career learners in health professions such as nursing, rehabilitation, and other allied health fields have unique opportunities to contribute significantly to this evolution. ECRs can explore and develop new methodologies tailored to the specific needs of health professions, such as integrating qualitative research and enhancing data synthesis techniques, as well as utilizing advanced technologies like artificial intelligence and big data analytics can improve the efficiency and impact of SRs and ScRs. Another area of exploration could include interprofessional collaboration, involving multiple health professions and engaging stakeholders, can address complex health issues comprehensively including incorporating patient perspectives and real-world evidence, such as results from pragmatic trials and health informatics data, ensures that reviews are aligned with patient needs and reflect real-world clinical practice. By focusing on these areas, ECRs in health professions can significantly advance knowledge synthesis, producing high-quality, impactful reviews that inform clinical practice and improve patient outcomes.

The approach and focus of SRs and ScRs conducted by ECRs in health professions such as nursing and rehabilitation can differ significantly from those conducted by physicians. Physicians typically concentrate on disease-specific interventions, clinical trials, and quantitative methodologies, prioritizing understanding disease mechanisms, developing new treatments, and improving diagnostics. Their reviews often aim to inform clinical decision-making, diagnosis, and short-term medical interventions, contributing directly to clinical guidelines and protocols within specialized medical fields. In contrast, ECRs in nursing and rehabilitation adopt a more holistic and patient-centric approach, emphasizing long-term care, patient well-being, functional outcomes, and quality of life. Their research priorities include patient education, chronic disease management, psychosocial aspects of care, and interdisciplinary approaches that integrate diverse study designs, including qualitative research and mixed methods. These reviews often involve interprofessional collaboration with a wide range of health professionals and aim to develop comprehensive practice guidelines and care models that address physical, emotional, and social aspects of patient care. Thus, while physicians' reviews are predominantly quantitative and disease-focused, nurses and rehabilitation professionals' reviews are broader in scope, incorporating holistic methodologies to inform sustained patient support and holistic outcomes.

Conclusion

For ECRs and librarians, the contributions of this study provide essential tools and strategies to navigate the complexities of SRs and ScRs. By addressing common challenges and barriers, my research facilitates the production of high-quality, impactful reviews. This, in turn, supports the advancement of health professions education, leading to improved educational outcomes and professional practice. Ultimately, the integration of pragmatic epistemology fosters a more effective and meaningful approach to research synthesis, benefitting both the academic community and the broader field of healthcare. My study bridges the gap between theoretical and practical applications in SRs and ScRs within health professions education. By adopting a pragmatic paradigm, I highlight the importance of grounding reviews in both robust theoretical frameworks and real-world relevance. This dual approach not only enhances the reliability and validity of research findings but also ensures their applicability in informing clinical guidelines, educational policies, and evidence-based practices.

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Appendix A: University of Ottawa Social Sciences and Humanities Research Ethics Board Approval

07/01/2021

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	S-10-20-6117
Titre du projet / Project Title	Barriers and facilitators facing early career researchers in health professions when conducting systematic and scoping reviews: A mixed methods study
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Approuvé partiellement / Approved-Partial
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	07/01/2021
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	06/01/2022

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Lindsey SIKORA	Faculté d'éducation / Faculty of Education	Chercheur Principal / Principal Investigator
Katherine MOREAU	Faculté d'éducation / Faculty of Education	Superviseur / Supervisor

Conditions spéciales ou commentaires / Special conditions or comments

Note: Given that the interview guides will be developed based on the survey responses, at this time, only Phase 1 (survey component) can be approved. Recruitment and data collection may begin for this phase. Once finalized, please submit a Request for Modification in order to append copies of the interview guides and revised Consent Forms.

550, rue Cumberland, pièce 154 550 Cumberland Street, Room 154
Ottawa (Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada
613-562-5387 • 613-562-5338 • ethique@uOttawa.ca / ethics@uOttawa.ca
www.recherche.uottawa.ca/deontologie | www.recherche.uottawa.ca/ethics

Appendix B ECME listserv approval for access for the study prior to participant recruitment

Lindsey Sikora

From: Mahan Kulasegaram <mahan777@gmail.com>
Sent: Tuesday, May 5, 2020 11:37 AM
To: Lindsey Sikora; Timothy Dubé
Subject: Re: ECME listserv question?

Attention : courriel externe | external email

Hi Lindsey

I hope you are doing well and staying safe!

I'm cc'ing my colleague Tim Dube as we discussed this request. We both feel that we would be able to share your survey via the listserv.

We'd ask you provide us with proof of REB and that the survey email provides the following info in addition to other background stuff: a) statement of REB approval, contact info for the approving body b) disclaimer that this is not affiliated with ECME and c) the appropriate contact info for questions.

It would be great to share the results of your work with the members as it would have relevance for them. We can discuss how that could take shape later.

In any case, be well and do let us know when you are ready.

Mahan

--

Kulamakan (Mahan) Kulasegaram, PhD

Scientist | The Wilson Centre & MD Program
Assistant Professor | Department of Family & Community Medicine
Faculty of Medicine, University of Toronto
Health Professions Education Research Stream | IHPME

Appendix C ECRs' survey in English

Survey for Early Career Researchers (Part 1, Phase 1)

Understanding the challenges and barriers faced by early career researchers when conducting systematic or scoping reviews

We would like to understand and measure your experiences when conducting systematic or scoping review methodologies in the health sciences and medicine. We would like to know about your barriers or challenges experienced when conducting a systematic or scoping review project. This survey uses several keywords. Here are the definitions of these keywords:

A **systematic review** attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question. Researchers conducting systematic reviews use explicit methods aimed at minimizing bias to produce more reliable findings that can be used to inform decision making (Higgins et al., 2019).

A **scoping review** is a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge (Arksey & O'Malley, 2005; Colquhoun et al, 2014).

An **early career researcher** is defined as a researcher or professional in their current chosen field of study for 5 years or less. This includes individuals who are near the beginning of their second or third chosen career.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (**PRISMA**) is an evidence-based minimum set of items for reporting in systematic reviews and meta-analyses. PRISMA focuses on the reporting of reviews evaluating randomized trials but can also be used as a basis for reporting systematic reviews of other types of research, particularly evaluations of interventions (Moher et al., 2009).

1) I am a researcher or professional serving a health sciences population.

- Yes
- No

If no, the survey ends.

2) How long have you been in your current field of study?

- 1 year
- 2 years
- 3 years
- 4 years
- 5 years
- More than 5 years

If more than 5 years, the survey ends.

- 3) How many years have you been involved with research projects (any task)?
- 1-2 years
 - 3-4 years
 - 5-6 years
 - 7-8 years
 - 9-10 years
 - More than 10 years
- 4) Have you ever completed or participated with a **systematic review** or **scoping review**?
- Yes, I have completed or participated with a **systematic review**
 - No, I have not completed or participated with a **systematic review**
 - Yes, I have completed or participated with a **scoping review**
 - No, I have not completed or participated with a **scoping review**
 - I have never completed or participated with either types of reviews

If the answer is “I have never completed or participated with “either types of reviews” for Question 3, survey ends.

- 5) How many **systematic reviews** have you completed or participated with?
- 1–2
 - 3–5
 - 6–8
 - More than 8
 - I don't know
 - None
- 6) How did you learn to do **systematic reviews**?
- From other colleagues and mentors
 - Hands-on practice
 - Training courses and professional development
 - Literature and written resources
 - Applied my existing research skills
 - Academic course in university/college
 - Supervising and teaching others
 - I do not know how to do a systematic review
 - Other (please specify): _____

- 7) Considering either your experience collaborating as a primary investigator on **systematic review** project(s) or assisting someone else with conducting a systematic review; how

often did you encounter the following **METHODOLOGICAL BARRIERS/CHALLENGES** encountered?

	Never	Rarely	Often	Always	Not sure	N/A
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.						
Researcher (or myself) did not have a protocol.						
Researcher (or myself) did not have one clear answerable question.						
Question was defined too broadly						
Question was defined too narrowly.						
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.						
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).						
Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.						
Researcher (or myself) was not using two screeners.						
Researcher (or myself) was not tracking reasons for exclusion.						
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).						
Researcher (or myself) did not have or follow a data extraction plan.						

8) What other **METHODOLOGICAL BARRIERS/CHALLENGES** have you encountered during a **systematic review** project(s)? Describe them below.

9) What strategies have you used to handle these **METHODOLOGICAL BARRIERS/CHALLENGES** during a **systematic review** project(s)? Please describe them below.

10) Considering either your experience collaborating as a primary investigator on **systematic review** projects or assisting someone else with conducting a **systematic review**, how often were the following **INTERPERSONAL BARRIERS/CHALLENGES** encountered?

	Never	Rarely	Often	Always	Not sure	N/A
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Research team could not agree on question.						
A student was leading the project.						
A student's faculty mentor was not helpful.						
Researcher refused request for authorship (to librarian or another member of the team).						
The research team had too many members.						
The research team had too few members.						
The research team was dysfunctional.						
Researcher considered you only as a PDF supplier or provider of administrative tasks.						
Researcher had unreasonable time expectations.						
Research team cannot agree on search terms.						
Communication issues between other research team members.						

11) What other INTERPERSONAL BARRIERS/CHALLENGES have you encountered during a **systematic review** project(s)? Describe them below.

12) For the challenges listed below, please drag and rank the barriers or challenges when conducting a systematic review or scoping review based on your experience (1 is most challenging, 2 is next most challenging, etc.).

Challenges	Ranking
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.	
Researcher (or myself) did not have a protocol.	
Researcher (or myself) did not have one clear answerable question.	
Question was defined too broadly	
Question was defined too narrowly.	
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.	
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).	

Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	
Researcher (or myself) was not using two screeners.	
Researcher (or myself) was not tracking reasons for exclusion.	
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	
Researcher (or myself) did not have or follow a data extraction plan.	
Research team could not agree on question.	
A student was leading the project, and the student's faculty mentor was not helpful.	
Researcher refused request for authorship (to librarian or another member of the team).	
The research team had too many members.	
The research team had too few members.	
The research team was dysfunctional.	
Researcher considered you only as a PDF supplier or provider of administrative tasks.	
Researcher had unreasonable time expectations.	
Research team cannot agree on search terms.	
Communication issues between other research team members.	

13) What other barriers or challenges have you encountered when conducting a **systematic review** project(s)? Describe them below.

14) Have you ever consulted with a librarian or information specialist when you were conducting your **systematic review** project(s)?

- Yes
- No
- I don't know
- Not applicable

15) Have you ever taken a training course(s) for conducting a systematic review?

- Yes

- No
- I don't know
- Not applicable

16) Have you ever given a training course(s) for conducting a systematic review?

- Yes
- No
- I don't know
- Not applicable

17) What barriers or challenges have you encountered when instructing a systematic review workshop/course? Describe them below.

18) How many **scoping reviews** have you completed or participated with?

- 1–2
- 3–5
- 6–8
- More than 8
- I don't know
- None

19) How did you learn to do **scoping reviews**?

- From other colleagues and mentors
- Hands-on practice
- Training courses and professional development
- Literature and written resources
- Applied my existing research skills
- Academic course in university/college
- Supervising and teaching others
- I do not know how to do a scoping review
- Other (please specify): _____

20) Considering either your experience collaborating as a primary investigator on **scoping review** project(s) or assisting someone else with conducting a systematic review; how often were the following **METHODOLOGICAL BARRIERS/CHALLENGES** encountered?

	Never	Rarely	Often	Always	Not sure	N/A
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.						
Researcher (or myself) did not have a protocol.						

Researcher (or myself) did not have one clear answerable question.						
Question was defined too broadly						
Question was defined too narrowly.						
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.						
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).						
Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.						
Researcher (or myself) was not using two screeners.						
Researcher (or myself) was not tracking reasons for exclusion.						
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).						
Researcher (or myself) did not have or follow a data extraction plan.						

21) What other **METHODOLOGICAL BARRIERS/CHALLENGES** have you encountered during a **scoping review** project(s)? Describe them below.

22) What strategies have you used to handle these **METHODOLOGICAL BARRIERS/CHALLENGES** during a **scoping review** project(s)? Please describe them below.

23) Considering either your experience collaborating as a primary investigator on **scoping review** projects or assisting someone else with conducting a **scoping review**, how often were the following **INTERPERSONAL BARRIERS/CHALLENGES** encountered?

	Never	Rarely	Often	Always	Not sure	N/A
Research team could not agree on question.						
A student was leading the project, and the student's faculty mentor was not helpful.						
Researcher refused request for authorship (to librarian or another member of the team).						
The research team had too many members.						

The research team had too few members.						
The research team was dysfunctional.						
Researcher considered you only as a PDF supplier or provider of administrative tasks.						
Researcher had unreasonable time expectations.						
Research team cannot agree on search terms.						
Communication issues between other research team members.						

24) What other INTERPERSONAL BARRIERS/CHALLENGES have you encountered during a **scoping review** project(s)? Describe them below.

25) For the challenges listed below, please drag and rank the barriers or challenges when conducting a **scoping review** based on your experience (1 is most challenging, 2 is next most challenging, etc.).

Challenges	Ranking
Researcher (or myself) was not really doing a systematic review, e.g., doing a narrative review.	
Researcher (or myself) did not have a protocol.	
Researcher (or myself) did not have one clear answerable question.	
Question was defined too broadly	
Question was defined too narrowly.	
Researcher (or myself) did not have inclusion/exclusion criteria established at the beginning of process.	
Researcher (or myself) was not using PRISMA (or a PRISMA-extension).	
Researcher (or myself) was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	
Researcher (or myself) was not using two screeners.	
Researcher (or myself) was not tracking reasons for exclusion.	
Researcher (or myself) did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	

Researcher (or myself) did not have or follow a data extraction plan.	
Research team could not agree on question.	
A student was leading the project, and the student's faculty mentor was not helpful.	
Researcher refused request for authorship (to librarian or another member of the team).	
The research team had too many members.	
The research team had too few members.	
The research team was dysfunctional.	
Researcher considered you only as a PDF supplier or provider of administrative tasks.	
Researcher had unreasonable time expectations.	
Research team cannot agree on search terms.	
Communication issues between other research team members.	

26) What other barriers or challenges have you encountered when conducting a **scoping review** project(s)? Describe them below.

27) Have you ever consulted with a librarian or information specialist when you were conducting your **scoping review** project(s)?

- Yes
- No
- I don't know
- Not applicable

28) Have you ever taken a training course(s) for conducting a **scoping review**?

- Yes
- No
- I don't know
- Not applicable

29) Have you ever given a training course(s) for conducting a **scoping review**?

- Yes
- No
- I don't know

- Not applicable

30) What barriers or challenges have you encountered when instructing a **scoping review** workshop/course? Describe them below.

31) What is your primary health sciences discipline?

- Medicine (including all subspecialties)
- Epidemiology and Public Health
- Nursing
- Dentistry
- Rehabilitation (i.e. occupational therapy, physical therapy, speech language pathology)
- Medical education or health professions education
- Bench sciences (i.e. neuroscience, molecular biology, biochemistry)
- Psychology
- Other (please specify): _____

32) What type of employer do you work for?

- Self-employed
- Government/Agency
- University/College
- Private Business
- Not-for-profit Agency
- Not applicable
- Other (please specify): _____

33) Would you be interested in participating in a follow-up interview for this study?

- Yes, please e-mail additional information to me
- Maybe, please e-mail additional information to me
- No, not at this time

If a respondent selects “Yes” or “Maybe”, they will be asked to provide their email address.

34) Would you be interested in being entered into a draw for a chance to win a \$25 Starbucks gift card?

- Yes
- No

If a respondent selects “Yes”, they will be asked to provide their email address.

35) Would you be interested in receiving a summary of the survey results?

- Yes
- No

If a respondent selects “Yes”, they will be asked to provide their email address.

Thank you for participation!

References

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Appendix D ECRs' survey in French

Sondage pour les chercheurs en début de carrière (partie 1, phase 1)

Comprendre les défis et les obstacles auxquels sont confrontés les chercheurs en début de carrière lorsqu'ils effectuent des revues systématiques ou de la portée

Nous aimerions comprendre et mesurer vos expériences lors de la réalisation de méthodologies d'examen systématique ou de portée dans le domaine des sciences de la santé et de la médecine. Nous aimerions connaître les obstacles ou les défis que vous avez rencontrés lors de la réalisation d'un projet de revue systématique ou de revue de portée. Cette enquête utilise plusieurs mots clés. Voici les définitions de ces mots clés :

Une **revue systématique** tente d'identifier, d'évaluer et de synthétiser toutes les preuves empiriques qui répondent à des critères d'éligibilité prédéfinis pour répondre à une question de recherche donnée. Les chercheurs qui effectuent des revues systématiques utilisent des méthodes explicites visant à minimiser les biais afin de produire des résultats plus fiables qui peuvent être utilisés pour éclairer la prise de décision (Higgins et coll., 2019).

Une **revue de la portée** (« **scoping review** ») est une forme de synthèse des connaissances qui aborde une question de recherche exploratoire visant à identifier les concepts clés, les types de preuves et les lacunes dans la recherche liée à un domaine ou à un secteur définis, en recherchant, sélectionnant et synthétisant systématiquement les connaissances existantes (Arksey & O'Malley, 2005 ; Colquhoun et coll., 2014).

Un (une) chercheur **en début de carrière** est défini comme Un (une) chercheur Un (une) chercheur ou un professionnel dans son domaine d'étude actuel pendant 5 ans ou moins. Cela inclut les personnes qui sont proches du début de leur deuxième ou troisième carrière.

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) sont des lignes directrices basées sur des données probantes pour les revues systématiques et les méta-analyses. PRISMA se concentre sur les rapports des revues évaluant des essais randomisés, mais peut également servir de base pour les rapports des revues systématiques d'autres types de recherche, en particulier les évaluations d'interventions (Moher et coll., 2009).

1) Je suis un(e) chercheur(e) ou un(e) professionnel (le) au service d'une population dans le domaine des sciences de la santé.

- Oui
- Non

Si non, le sondage se termine.

2) Depuis combien de temps êtes-vous dans votre domaine d'études actuel ?

- 1 an
- 2 ans
- 3 ans

- 4 ans
- 5 ans
- Plus de 5 ans

Si elle dure plus de 5 ans, le sondage se termine.

3) Combien de **revues systématiques** avez-vous complétées ou auxquelles avez-vous participé ?

- 1–2
- 3–5
- 6–8
- Plus de 8
- Je ne sais pas
- Aucun

4) Combien de **revues de la portée** avez-vous complétées ou auxquelles avez-vous participé ?

- 1–2
- 3–5
- 6–8
- Plus de 8
- Je ne sais pas
- Aucun

S'il n'y en a pas d'expérience pour les questions 4 et 5, le sondage se termine.

5) Depuis combien d'années participez-vous à des projets de recherche (toutes les tâches) ?

- 1 à 2 ans
- 3-4 ans
- 5-6 ans
- 7-8 ans
- 9-10 ans
- Plus de 10 ans

6) Comment avez-vous appris à faire des **revues systématiques** ?

- Par d'autres collègues et mentors
- Exercices pratiques
- Cours de formation et développement professionnel
- Littérature et ressources écrites
- Appliquer mes compétences existantes en matière de recherche
- Cours académique dans une université/un collège
- Superviser et enseigner aux autres
- Je ne sais pas comment faire une revue systématique
- Autre (veuillez préciser) : _____

7) Comment avez-vous appris à faire des **revues de la portée** ?

- Par d'autres collègues et mentors

- Exercices pratiques
- Cours de formation et développement professionnel
- Littérature et ressources écrites
- Appliquer mes compétences existantes en matière de recherche
- Cours académique dans une université/un collègue
- Superviser et enseigner aux autres
- Je ne sais pas comment procéder à une revue de la portée
- Autre (veuillez préciser) : _____

8) Compte tenu de votre expérience de collaboration en tant que chercheur principal sur un ou plusieurs projets de **revue systématique** ou d'assistance à quelqu'un d'autre pour la réalisation d'une revue systématique, à quelle fréquence avez-vous rencontré les OBSTACLES/DÉFIS MÉTHODOLOGIQUES suivants ? (Si vous n'avez jamais effectué une revue systématique, veuillez passer à la question 12.)

	Jamais	Rarement	Souvent	Toujours	Incertain	Sans objet
Le (la) chercheur (ou moi-même) n'effectuait pas vraiment de revue systématique, par exemple une revue narrative.						
Le (la) chercheur (ou moi-même) n'avait pas de protocole.						
Le (la) chercheur (ou moi-même) n'avait pas une seule question à laquelle il pouvait répondre clairement.						
La question était définie de manière trop large						
La question a été définie de manière trop étroite.						
Le (la) chercheur (ou moi-même) n'avait pas de critères d'inclusion/exclusion établis au début du processus.						
Le (la) chercheur (ou moi-même) n'utilisait pas PRISMA (ou une extension de PRISMA).						
Le (la) chercheur (ou moi-même) n'a pas utilisé le processus de sélection en deux étapes, c'est-à-dire qu'il a d'abord examiné le titre/résumé puis le texte intégral des articles.						
Le (la) chercheur (ou moi-même) n'utilisait pas deux filtres.						

Le (la) chercheur (ou moi-même) ne cherchait pas les raisons de son exclusion.						
Le (la) chercheur (ou moi-même) ne voulait pas évaluer la qualité de l'étude dans le cadre du processus (évaluation critique ou risque de partialité).						
Le (la) chercheur (ou moi-même) n'avait pas ou ne suivait pas de plan d'extraction des données.						

9) Quels autres **OBSTACLES/DÉFIS MÉTHODOLOGIQUES** avez-vous rencontrés au cours d'un projet de **revue systématique** ? Décrivez-les ci-dessous.

10) Compte tenu de votre expérience de collaboration en tant que chercheur principal dans le cadre d'un ou plusieurs projets de **revue de la portée** ou d'assistance à quelqu'un d'autre dans la conduite d'une revue de la portée, à quelle fréquence avez-vous rencontré les **OBSTACLES/DÉFIS MÉTHODOLOGIQUES** suivants ?

	Jamais	Rarement	Souvent	Toujours	Incertaine	Sans objet
Le (la) chercheur (ou moi-même) n'effectuait pas vraiment de revue systématique, par exemple une revue narrative.						
Le (la) chercheur (ou moi-même) n'avait pas de protocole.						
Le (la) chercheur (ou moi-même) n'avait pas une seule question à laquelle il pouvait répondre clairement.						
La question était définie de manière trop large						
La question a été définie de manière trop étroite.						
Le (la) chercheur (ou moi-même) n'avait pas de critères d'inclusion/exclusion établis au début du processus.						
Le (la) chercheur (ou moi-même) n'utilisait pas PRISMA (ou une extension de PRISMA).						
Le (la) chercheur (ou moi-même) n'a pas utilisé le processus de						

sélection en deux étapes, c'est-à-dire qu'il a d'abord examiné le titre/résumé puis le texte intégral des articles.						
Le (la) chercheur (ou moi-même) n'utilisait pas deux filtres.						
Le (la) chercheur (ou moi-même) ne cherchait pas les raisons de son exclusion.						
Le (la) chercheur (ou moi-même) ne voulait pas évaluer la qualité de l'étude dans le cadre du processus (évaluation critique ou risque de partialité).						
Le (la) chercheur (ou moi-même) n'avait pas ou ne suivait pas de plan d'extraction des données.						

11) Quels autres **OBSTACLES/DÉFIS MÉTHODOLOGIQUES** avez-vous rencontrés au cours d'un ou plusieurs projets de **revue de la portée** ? Décrivez-les ci-dessous.

12) Quelles stratégies avez-vous utilisées pour faire face à ces **OBSTACLES/DÉFIS MÉTHODOLOGIQUES** au cours d'un projet de revue systématique ou de la portée ? Veuillez les décrire ci-dessous.

13) Compte tenu de votre expérience de collaboration en tant que chercheur principal dans le cadre de projets de **revue systématique** ou d'assistance à quelqu'un d'autre pour la réalisation d'une revue systématique, à quelle fréquence les **OBSTACLES/DÉFIS INTERPERSONNELS** suivants ont-ils été rencontrés ?

	Jamais	Rarement	Souvent	Toujours	Incertain	Sans objet
L'équipe de recherche n'a pas pu s'entendre sur la question.						
Un étudiant dirigeait le projet.						
Le mentor d'un étudiant n'a pas été d'une grande aide.						
Le (la) chercheur a refusé la demande de publication (au bibliothécaire ou à un autre membre de l'équipe).						
L'équipe de recherche comprenait trop de membres.						
L'équipe de recherche comprenait trop peu de membres.						
L'équipe de recherche était dysfonctionnelle.						

Le (la) chercheur vous a considéré uniquement comme un fournisseur de PDF ou un fournisseur de tâches administratives.						
Le (la) chercheur avait des attentes déraisonnables en matière de temps.						
L'équipe de recherche n'arrive pas à s'entendre sur les termes de recherche.						
Problèmes de communication entre les autres membres de l'équipe de recherche.						
L'équipe de recherche n'a pas pu s'entendre sur la question.						

14) Quels autres **OBSTACLES/DÉFIS INTERPERSONNELS** avez-vous rencontrés au cours d'un projet de **revue systématique** ? Décrivez-les ci-dessous.

15) Compte tenu de votre expérience de collaboration en tant qu'enquêteur principal dans le cadre de projets de **revue de la portée** ou d'assistance à quelqu'un d'autre dans la conduite d'une revue de la portée, à quelle fréquence avez-vous rencontré les **OBSTACLES/DÉFIS INTERPERSONNELS** suivants ?

	Jamais	Rarement	Souvent	Toujours	Incertain	Sans objet
L'équipe de recherche n'a pas pu s'entendre sur la question.						
Un étudiant dirigeait le projet.						
Le mentor d'un étudiant n'a pas été d'une grande aide.						
Le (la) chercheur a refusé la demande de publication (au bibliothécaire ou à un autre membre de l'équipe).						
L'équipe de recherche comprenait trop de membres.						
L'équipe de recherche comprenait trop peu de membres.						
L'équipe de recherche était dysfonctionnelle.						
Le (la) chercheur vous a considéré uniquement comme un fournisseur de PDF ou un fournisseur de tâches administratives.						
Le (la) chercheur avait des attentes déraisonnables en matière de temps.						

L'équipe de recherche n'arrive pas à s'entendre sur les termes de recherche.						
Problèmes de communication entre les autres membres de l'équipe de recherche.						
L'équipe de recherche n'a pas pu s'entendre sur la question.						

16) Quels autres **OBSTACLES/DÉFIS INTERPERSONNELS** avez-vous rencontrés au cours d'un ou plusieurs projets de **revue de la portée** ? Décrivez-les ci-dessous.

17) Pour les défis énumérés ci-dessous, veuillez faire coulisser et classer les 5 obstacles ou défis les plus importants lors de la réalisation en fonction de votre expérience (1 est le plus difficile, 2 est le suivant, etc.).

Défis	Classement
Le (la) chercheur (ou moi-même) n'effectuait pas vraiment de revue systématique, par exemple une revue narrative.	
Le (la) chercheur (ou moi-même) n'avait pas de protocole.	
Le (la) chercheur (ou moi-même) n'avait pas une seule question à laquelle il pouvait répondre clairement.	
La question était définie de manière trop générale.	
La question a été définie de manière trop restrictive.	
Le (la) chercheur (ou moi-même) n'avait pas de critères d'inclusion/exclusion établis au début du processus.	
Le (la) chercheur (ou moi-même) n'utilisait pas PRISMA (ou une extension de PRISMA).	
Le (la) chercheur (ou moi-même) n'a pas utilisé le processus de sélection en deux étapes, c'est-à-dire d'abord la revue du titre/résumé puis le texte intégral des articles.	
Le (la) chercheur (ou moi-même) n'utilisait pas deux filtres.	
Le (la) chercheur (ou moi-même) n'indiquait pas les raisons d'exclusion.	

Le (la) chercheur (ou moi-même) ne voulait pas évaluer la qualité de l'étude dans le cadre du processus (évaluation critique ou risque de partialité).	
Le (la) chercheur (ou moi-même) n'avait pas ou ne suivait pas de plan d'extraction des données.	
L'équipe de recherche n'a pas pu se mettre d'accord sur la question.	
Un étudiant dirigeait le projet, et le mentor de l'étudiant n'a pas été d'une grande aide.	
Le (la) chercheur a refusé la demande de publication (au bibliothécaire ou à un autre membre de l'équipe).	
L'équipe de recherche comprenait trop de membres.	
L'équipe de recherche comprenait trop peu de membres.	
L'équipe de recherche était dysfonctionnelle.	
Le (la) chercheur vous a considéré uniquement comme un fournisseur de PDF ou un fournisseur de tâches administratives.	
Le (la) chercheur avait des attentes déraisonnables en matière de temps.	
L'équipe de recherche n'arrive pas à s'entendre sur les termes de recherche.	
Problèmes de communication entre les autres membres de l'équipe de recherche.	

18) Quels autres obstacles ou difficultés avez-vous rencontrés lors de la réalisation d'un ou de plusieurs projets de **revue systématique ou de la portée** ? Décrivez-les ci-dessous.

19) Avez-vous déjà consulté un bibliothécaire ou un spécialiste de l'information lorsque vous réalisiez votre ou vos projets de **revue systématique ou de revue de la portée** ?

- Oui
- Non
- Je ne sais pas
- Sans objet

20) Avez-vous déjà suivi une ou plusieurs formations pour effectuer une **revue systématique** ?

- Oui
- Non

- Je ne sais pas
- Sans objet

21) Avez-vous déjà suivi une (des) formation(s) pour la conduite d'une **revue de la portée** ?

- Oui
- Non
- Je ne sais pas
- Sans objet

22) Avez-vous déjà donné une ou plusieurs formations pour effectuer une **revue systématique** ?

- Oui
- Non
- Je ne sais pas
- Sans objet

23) Avez-vous déjà donné une ou plusieurs formations pour la conduite d'une **revue de la portée** ?

- Oui
- Non
- Je ne sais pas
- Sans objet

24) Quels obstacles ou défis avez-vous rencontrés en donnant un atelier/cours de **revue systématique** ? Décrivez-les ci-dessous.

25) Quels obstacles ou défis avez-vous rencontrés lorsque vous avez donné des instructions pour un atelier/cours de **revue de la portée** ? Décrivez-les ci-dessous.

26) Quelle est votre discipline principale en sciences de la santé ?

- Médecine (y compris toutes les sous-spécialités)
- Épidémiologie et santé publique
- Soins infirmiers
- Dentisterie
- Réadaptation (par exemple : ergothérapie, physiothérapie, orthophonie)
- Enseignement médical ou formation aux professions de la santé
- Les sciences de laboratoire (par exemple : les neurosciences, la biologie moléculaire, la biochimie)
- Psychologie
- Autre (veuillez préciser) : _____

27) Pour quel type d'employeur travaillez-vous ?

- Indépendant(e)
- Gouvernement/Agence
- Université/Collège
- Entreprises privées

- Agence à but non lucratif
- Sans objet
- Autre (veuillez préciser) : _____

28) Souhaitez-vous participer à un entretien de suivi pour cette étude ?

- Oui, veuillez m'envoyer des informations complémentaires par courrier électronique
- Peut-être, veuillez m'envoyer par courriel des informations complémentaires
- Non, pas pour le moment

Si un répondant choisit « Oui » ou « Peut-être », on lui demandera de fournir son adresse électronique.

29) Souhaitez-vous participer à un tirage au sort pour avoir une chance de gagner une carte cadeau Starbucks de 25 \$?

- Oui
- Non

Si un répondant choisit « Oui », on lui demandera de fournir son adresse électronique.

30) Souhaitez-vous recevoir un résumé des résultats de l'enquête ?

- Oui
- Non

Si un répondant choisit « Oui », on lui demandera de fournir son adresse électronique.

Merci pour votre participation !

Références

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19-32.

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Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G. & The PRISMA Group. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, 6(7): e1000097. doi:10.1371/journal.pmed1000097

Letter of Information for Early Career Researchers (Phase 1 – Survey)



Université d'Ottawa / University of Ottawa

1st Emailing – Initial Request

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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You are invited to take part in the above-mentioned two-phase research study conducted by Lindsey Sikora, PhD candidate from the University of Ottawa under the supervision of Professor Katherine Moreau.

The purpose of the study is to better understand the perceived challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, this survey will help determine how librarians can better support ECRs when conducting SRs and ScRs.

For Phase 1 of the study, you are invited to complete the attached survey. The survey contains a range of questions about your experience when conducting SRs and ScRs. In particular, it asks about **your** perceptions of and experiences with challenges and barriers you have encountered when completing SRs and ScRs as an ECR. It also contains some demographic questions. The survey will take approximately **15 minutes** to complete. We ask that you complete the survey online using the following link <https://www.surveymonkey.ca/r/ECRsenglish> by **Friday, March 26th, 2021**. By selecting **"I agree"** on the survey platform, you are consenting to participate in Phase 1 of this study.

There is little risk associated with your involvement in Phase 1 of the study. Some of the items and questions on the survey may make you feel uncomfortable because they ask about your

perceptions of and experiences with challenges and barriers you have encountered when completing SRs and ScRs as an ECR. You do not have to respond to any items or answer questions that make you feel uncomfortable.

You may or may not benefit directly from Phase 1 of the study. The study will generate awareness and reflection about the challenges and barriers you have encountered when completing SRs and ScRs as an ECR. The study will also potentially improve SRs and ScRs methodologies by building on the very limited body of empirical research on challenges and barriers experienced by ECRs when conducting SRs and ScRs, so that they can make informed decisions about the methods and considerations required when completing these types of reviews. To thank you for your participation in the study, you will receive a summary of the findings and if you'd like to enter an email at the end of the survey, you will be given the option to enter your name in a draw to win one of four Starbucks gift cards valued at \$25. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries retrieved. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name and email address that you provide when you enter the draw is collected for the purposes of contacting you if your name is selected in the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prizes have been awarded.

We reserve the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

The questionnaire survey is designed so that your identity will remain strictly confidential and anonymous. Your responses to the survey will only be used for describing the challenges and barriers encountered by ECRs when conducting SRs and/or ScRs.

If you are interested in participating in Phase 2 of this project, the survey will ask you to provide your name and email address. This information will not be combined with your survey responses. It will only be used for recruitment purposes if you are interested in participating in Phase 2. Your survey responses will be combined with other responses so that you cannot be identified in published reports or presentations. Also, any written responses that could potentially reveal your identity (e.g., name, town, or region) will be blacked out from the survey and not included in the database.

Completed surveys will be stored on a password-protected computer in a University of Ottawa research office. Only the members of the above-mentioned research team will have access to the questionnaire surveys. Data will be conserved for five years after the publication of research findings. After this time, data will be shredded and appropriately discarded.

The completion of this survey is **voluntary**. Once the survey is submitted, participants will be unable to withdraw their data from the study as the researchers will be unable to retrace individual datasets.

If you have any questions about the study please contact Lindsey Sikora or Katherine Moreau, at the coordinates below. If you have any questions regarding the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa at:

Tabaret Hall
550 Cumberland Street, Room 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Sincerely,

Research Team:	Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Appendix F Survey Letter of Information for ECRs in French

Lettre d'information pour les chercheurs en début de carrière (Phase 1 - Sondage)

Université d'Ottawa / University of Ottawa
1er envoi par courriel - Demande préliminaire

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Vous êtes invité à participer à l'étude de recherche en deux phases mentionnée ci-dessus, menée par Lindsey Sikora, doctorante de l'Université d'Ottawa, sous la supervision du professeur Katherine Moreau.

L'objectif de l'étude est de mieux comprendre les défis et les obstacles perçus auxquels sont confrontés les chercheurs en début de carrière et les bibliothécaires lorsqu'ils (elles) effectuent des revues systématiques et des revues de la portée en sciences de la santé et en médecine. Cette phase de recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et les bibliothécaires lors de l'exécution de ces revues. De plus, cette enquête permettra de déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils (elles) réalisent des revues systématiques et des revues de la portée.

Pour la première phase de l'étude, vous êtes invités à remplir le questionnaire ci-joint. Le sondage contient une série de questions sur votre expérience lors de la conduite des revues systématiques et de la portée. En particulier, il s'agit de connaître votre perception et votre expérience des défis et des obstacles que vous avez rencontrés lors de la réalisation des revues systématiques et de la portée en tant que chercheurs en début de carrière. Elle contient également quelques questions démographiques. Il faut environ 15 minutes pour répondre à ce sondage. Nous vous demandons de répondre à ce sondage en ligne en utilisant le lien suivant <https://www.surveymonkey.ca/r/ECRsFrench> avant **le vendredi 26 mars 2021**. En sélectionnant « **J'accepte** » sur la plate-forme de sondage, vous consentez à participer à la première phase de cette étude.

Il y a peu de risques associés à votre participation à la première phase de l'étude. Certains des éléments et questions de ce sondage peuvent vous mettre mal à l'aise, car ils vous demandent de préciser vos perceptions et vos expériences des défis et des obstacles que vous avez rencontrés en remplissant les revues systématiques et de la portée en tant que chercheurs en début de carrière. Vous n'êtes pas obligé de répondre à des éléments ou à des questions qui vous mettent mal à l'aise.

Vous pouvez ou non bénéficier directement de la première phase de l'étude. L'étude vous permettra de prendre conscience et réfléchir aux défis et aux obstacles que vous avez rencontrés en effectuant des revues systématiques et de la portée en tant que chercheurs en début de carrière. L'étude permettra également d'améliorer les méthodologies des revues systématiques et de la portée en s'appuyant sur le peu de recherches empiriques sur les défis et les obstacles rencontrés par les chercheurs en début de carrière lors de la réalisation des revues systématiques et de la portée, afin qu'ils (elles) puissent prendre des décisions informées sur les méthodes et les considérations requises lors de la réalisation de ces types de revues. Pour vous remercier de votre participation à l'étude, vous recevrez un sommaire des résultats et si vous souhaitez vous inscrire par courriel à la fin de ce sondage, vous aurez la possibilité de vous joindre à un tirage pour gagner l'une des quatre cartes-cadeaux Starbucks d'une valeur de 25 \$. Le tirage est ouvert à tous les participant(e)s à la recherche qui s'inscrivent, qu'ils (elles) décident ou non de se retirer de leur participation au projet de recherche.

Une fois l'étude terminée, un nom sera choisi au hasard parmi ceux (celles) qui se sont inscrit(e)s et la personne dont le nom est tiré sera informée par courriel. Pour gagner le prix, la personne doit répondre correctement à une question d'aptitude. Si la personne ne peut être jointe dans les 14 jours suivants, la date du tirage, le prix sera attribué au deuxième nom choisi au hasard et ainsi de suite jusqu'à ce que le prix ait été attribué. Les chances de gagner un prix dépendront du nombre d'inscriptions admissibles récupérées. Le prix doit être accepté tel quel ou perdu et ne peut être échangé contre de l'argent.

Votre nom et l'adresse courriel que vous fournissez lorsque vous participez au tirage sont collectés afin de vous contacter si votre nom est sélectionné lors du tirage. Votre nom et les informations de contact que vous avez fournies seront gardés confidentiels et ensuite détruits une fois les prix attribués.

Nous nous réservons le droit d'annuler le tirage ou d'annuler l'attribution du prix si l'intégrité du tirage ou de la recherche ou la confidentialité des participants est compromise. Le tirage est régi par les lois applicables du Canada.

Le sondage est conçu de manière à ce que votre identité reste strictement confidentielle et anonyme. Vos réponses à ce sondage ne seront utilisées que pour décrire les défis et les obstacles rencontrés par les chercheurs en début de carrière lors de la conduite des revues systématiques et/ou de la portée.

Si vous souhaitez participer à la deuxième phase de ce projet, le sondage vous demandera de fournir votre nom et votre adresse électronique. Ces informations ne seront pas combinées avec vos réponses à ce sondage. Elles ne seront utilisées qu'à des fins de recrutement si vous souhaitez participer à la deuxième phase. Vos réponses à ce sondage seront combinées avec d'autres réponses de sorte que vous ne pourrez pas être identifié dans les rapports ou présentations publiés. En outre, toute réponse écrite qui pourrait révéler votre identité (par exemple, votre nom, votre ville ou votre région) sera masquée dans le sondage et ne sera pas incluse dans la base de données.

Les sondages complétés seront enregistrés sur un ordinateur protégé par un mot de passe dans un bureau de recherche de l'Université d'Ottawa. Seuls les membres de l'équipe de recherche susmentionnée auront accès aux sondages. Les données seront conservées pendant cinq ans après la publication des résultats de la recherche. Après cette période, les données seront déchiquetées et éliminées de manière appropriée.

La participation à cette étude est volontaire. Une fois le sondage soumis, les participants ne pourront plus retirer leurs données de l'étude, car les chercheurs ne pourront plus retracer les ensembles de données individuels.

Si vous avez des questions concernant l'étude, veuillez contacter Lindsey Sikora ou Katherine Moreau, aux coordonnées ci-dessous. Si vous avez des questions concernant la conduite éthique de cette étude, vous pouvez contacter le responsable du protocole pour l'éthique dans la recherche, Université d'Ottawa à l'adresse suivante :

Salle Tabaret
 550, rue Cumberland, salle 156
 Ottawa, Ontario K1N 6N5
 (613) 562-5382
 ethics@uottawa.ca

Cordialement,

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Appendix G ECRs' reminder email for the survey in English

Letters of Information for Early Career Researchers – Reminder Email - (Phase 1 – Survey)



Université d'Ottawa / University of Ottawa

2nd Emailing – Reminder

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Hello,

Recently, you were invited to take part in a study conducted by Lindsey Sikora, PhD candidate from the University of Ottawa under the supervision of Dr. Katherine Moreau.

The purpose of the study is to better understand the perceived challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, this survey will help determine how librarians can better support ECRs when conducting SRs and ScRs.

If you have completed the survey – THANK YOU!

The completion of the linked survey is **voluntary** but each response is valuable to us. If you have not yet completed the survey, we would appreciate if you would consider taking approximately 15 minutes to do so using the following link <https://www.surveymonkey.ca/r/ECRsenglish>. Please remember that your identity and responses will be kept confidential.

Sincerely,

Research Team:	Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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**Lettre d'information pour les chercheurs en début de carrière — Courriel de rappel
(Phase 1 — Sondage)**

Université d'Ottawa/University of Ottawa
2e envoi par courrier électronique — Rappel

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Bonjour,

Récemment, vous avez été invité à participer à une étude menée par Lindsey Sikora, doctorante de l'Université d'Ottawa, sous la supervision de la professeur Katherine Moreau.

L'objectif de l'étude est de mieux comprendre les défis et les obstacles perçus par les chercheurs en début de carrière et les bibliothécaires lorsqu'ils effectuent des revues systématiques et des revues de la portée dans le domaine des sciences de la santé et de la médecine. Cette phase de la recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et des bibliothécaires lors de la réalisation de ces revues. De plus, cette étude permettra de déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils (elles) effectuent des revues systématiques et des revues de la portée.

Si vous avez répondu à ce sondage — MERCI !

La participation à ce sondage est volontaire, mais nous sommes reconnaissants de chaque réponse. Si vous n'avez pas encore répondu à ce sondage, nous vous serions reconnaissants de bien vouloir prendre environ 15 minutes pour le faire en utilisant le lien suivant <https://www.surveymonkey.ca/r/ECRsFrench>. N'oubliez pas que votre identité et vos réponses resteront confidentielles.

Cordialement,

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Interview Guide

Research Question: What are the barriers and challenges early career researchers (ECRs) in health professions face when conducting systematic reviews (SRs) and scoping reviews (ScRs)?

1. What are some methodological barriers or challenges you have experienced as an early career researcher doing systematic or scoping reviews?
 - a. Did you find the methods easier or more challenging for completing a systematic review or a scoping review, or were both equal in their challenges? Tell me about your experience.
2. What are some interpersonal barriers or challenges you have experienced as an early career researcher doing systematic or scoping reviews?

Research Question: What are potential facilitators and solutions to overcoming the barriers and challenges that ECRs in health professions face when conducting SRs or ScRs?

1. How did you overcome these methodological barriers or challenges?
 - a. Was there a particular strategy or strategies that you used?
2. How did you overcome these interpersonal barriers or challenges?
 - a. Was there a particular strategy or strategies that you used?

Research Question: According to ECRs, how can librarians better support ECRs when conducting SRs and ScRs?

1. Have you ever worked with a librarian on a systematic or scoping review?
 - a. If yes, tell me about your experience.
 - b. If no, could you tell me why not?

End

1. Is there anything that you would like to add to the interview about this topic?

Guide d'entretien

DATE: _____

HEURE : _____

ID DU PARTICIPANT : _____

AUDITEUR : _____

Question de recherche : Quels sont les obstacles et les défis auxquels sont confrontés les chercheurs en début de carrière dans les professions de santé lorsqu'ils réalisent des revues systématiques et des revues de portée ?

- 1) Quels sont les obstacles ou les défis méthodologiques que vous avez rencontrés en tant que chercheur en début de carrière lors de la réalisation de revues systématiques ou de revues de portée ?
 - a. Avez-vous trouvé les méthodes plus faciles ou plus difficiles à mettre en œuvre pour réaliser une revue systématique ou une revue de la portée, ou les deux ont-elles présenté les mêmes défis ? Racontez-moi votre expérience.
- 2) Quels sont les obstacles ou les défis interpersonnels que vous avez rencontrés en tant que chercheur en début de carrière effectuant des revues systématiques ou des revues de la portée ?

Question de recherche : Quels sont les facilitateurs et les solutions possibles pour surmonter les obstacles et les défis auxquels sont confrontés les chercheurs en début de carrière dans les professions de santé lorsqu'ils effectuent des revues systématiques et des revues de la portée ?

- 1) Comment avez-vous surmonté ces obstacles ou défis méthodologiques ?
 - a. Avez-vous utilisé une ou plusieurs stratégies particulières ?
- 2) Comment avez-vous surmonté ces obstacles ou défis interpersonnels ?
 - a. Avez-vous utilisé une ou plusieurs stratégies particulières ?

Question de recherche : Selon les chercheurs en début de carrière, comment les bibliothécaires peuvent-ils mieux soutenir les ECR lors de la réalisation de revues systématiques et de revues de portée ?

- 1) Avez-vous déjà travaillé avec un bibliothécaire sur un revue systématique ou de revue de portée ?
 - a. Si oui, parlez-moi de votre expérience.
 - b. Si non, pouvez-vous me dire pourquoi ?

Fin

1. Y a-t-il quelque chose que vous aimeriez ajouter à la conversation sur ce sujet ?

Appendix K ECRs letter of information for interviews in English

Letter of Information for Early Career Researchers (Phase 2 - Interviews)



Université d'Ottawa / University of Ottawa

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5 (613) 562-5800 (ext. 8959)	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Dear [insert name of early career researcher],

You are invited to participate in a one-on-one interview for Phase 2 of the above-mentioned study.

The purpose of the study is to better understand the challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, this survey will help determine how librarians can better support ECRs when conducting SRs and ScRs.

If you agree to participate in this phase of the study, you will be asked to take part in one one-on-one interview. We are aiming to interview 10-15 ECRs. The interview may take place by Zoom at a time that is convenient for you. We will ask that you select a location for the interview that is private and convenient for you. Lindsey Sikora will then conduct the interview with you by Zoom from a private office. The interview will be a semi-structured conversation-style session. In the interview, you will be asked a few open-ended questions, encouraging you to comment on your experience surrounding the challenges and barriers, but also the facilitators around conducting SRs and ScRs. This can include reflections on methods, processes, expectations, and results or anything you deem relevant. The interview will take approximately **60 minutes** to complete. With your consent, the interview will be audio-recorded and transcribed by Lindsey Sikora or a professional transcriptionist for analysis. You will not be asked your name during the interview process, to protect your anonymity. Lindsey Sikora will terminate recruitment once 15 interviews are achieved. The interviewees will be selected on a first-come, first-serve basis.

Lindsey Sikora will send an email reply to any individuals not included in Phase 2 to explain that the project has reached its capacity for participants and thank them for volunteering.

There is little risk associated with your involvement in this study. Some of the questions in the interview may make you feel uncomfortable because they ask about your experiences and perceptions surrounding the challenges and barriers, but also the facilitators around conducting SRs and ScRs. You do not have to respond to any questions that make you feel uncomfortable. You may refuse to participate in the study. Your responses, recordings and transcripts will remain confidential.

You may or may not benefit directly from Phase 2 of the study. The study will generate awareness and reflection about the challenges and barriers you have encountered when completing SRs and ScRs as an ECR. The study will also potentially improve SRs and ScRs methodologies by building on the very limited body of empirical research on challenges and barriers experienced by ECRs when conducting SRs and ScRs, so that they can make informed decisions about the methods and considerations required when completing these types of reviews. To thank you for your participation in the study, you will receive a summary of the findings and if you'd like to enter an email at the end of the interview, you will be given the option to enter your name in a draw to win one of four Starbucks gift cards valued at \$25. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries retrieved. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name and email address that you provide when you enter the draw is collected for the purposes of contacting you if your name is selected in the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prizes have been awarded.

We reserve the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

The information that you share in the interview will remain strictly confidential. The information you provide in the interview will only be used for describing the challenges and barriers encountered by ECRs when conducting SRs and/or ScRs. Because the interview will be conducted by Zoom with Lindsey Sikora, your anonymity cannot be fully protected. Only Lindsey Sikora and her supervisor will know your identity, and you will not be asked to state your name in the interview. Any information that could potentially reveal your identity (e.g., name, specific position in the organization, years of experience) will be erased from the audio

recording and transcript so that you cannot be identified in published reports or presentations. We will email you a copy of your interview transcript to review and revise prior to analyses. We will password-protect the transcript and will contact you directly to provide you with the password.

The digital audio recording of the interview will be downloaded and erased from the audio-recorder immediately after the interview. All data will be stored in a locked research office at the University of Ottawa. All audio recordings will be stored on a password-protected computer in the same office. Only the members of the above-mentioned research team will have access to the data. Data will be conserved for five years after the publication of research findings. After this time, data will be shredded and appropriately discarded.

Your participation in the study and interview is **voluntary**. You can withdraw from the study at any time and/or refuse to answer any questions without any negative consequences. If you choose to withdraw, all data gathered until the time of withdrawal will be deleted, destroyed, and not included in any publications or presentations.

If you are interested in participating in a one-on-one interview for this study please contact Lindsey Sikora by [insert date] to obtain additional information about the interview. As mentioned, the interview will be scheduled at a time that is convenient for you. Your written consent will be obtained prior to the interview. We will email you a copy of the consent form to review, sign, and return to Lindsey Sikora prior to the interview. We will password-protect the consent form and contact you directly to provide you with the password. If you choose to conduct the interview by Zoom you can print and sign the consent form and then send a password-protected electronic copy of the completed consent form to Lindsey Sikora by email or you can mail her a signed copy of it.

If you have any questions about the study, please contact Lindsey Sikora or Katherine Moreau at the coordinates below. If you have any questions regarding the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa at:

Tabaret Hall
550 Cumberland Street, Room 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Sincerely,

<hr/> <p>Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5</p>	<hr/> <p>Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083</p>
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(613) 562-5800 (ext. 8959)

136, Jean-Jacques-Lussier Private
Ottawa, Ontario
K1N 6N5
(613) 562-5800 (ext. 2808)

Appendix L ECRs' interview consent form in English

Consent Form (Early Career Researchers)



Université d'Ottawa / University of Ottawa

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5 (613) 562-5800 (ext. 8959)	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Invitation to Participate: I am invited to participate in a one-on-one interview for the above-mentioned research study conducted by Lindsey Sikora, PhD (Education) candidate from the University of Ottawa under the supervision of Professor Katherine Moreau. The Social Sciences and Humanities Research Ethics Board at the University of Ottawa has approved the ethical components of this project.

Purpose of the Study:

The purpose of the study is to better understand the challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, these interviews will help determine how librarians can better support ECRs when conducting SRs and ScRs.

Participation: My participation will consist of taking part in one one-on-one interview. The interview may take place by Zoom at a time that is convenient for me. Lindsey Sikora will then conduct the interview with me from a private office. The interview will be a semi-structured, conversation-style session. In the interview, I will be asked a few open-ended questions, encouraging me to comment on my experience surrounding the challenges and barriers, but also the facilitators around conducting SRs and ScRs. This can include reflections on methods, processes, expectations, and results or anything I deem relevant. The interview will take approximately **60 minutes** to complete. With my consent, the interview will be audio-recorded and transcribed by Lindsey Sikora or a professional transcriptionist for analysis. I understand that I will not be asked my name during the interview process, to protect my anonymity.

Risks: There is little risk associated with my involvement in this study. Some of the questions in the interview may make me feel uncomfortable because they ask about my experiences and perceptions surrounding the challenges and barriers, but also the facilitators around conducting SRs and ScRs. I do

not have to respond to any questions that make me feel uncomfortable. I may refuse to participate in the study. My responses, recoding and transcripts will remain confidential.

Benefits: I may or may not benefit directly from this study. The study will generate awareness and reflection about the challenges and barriers you have encountered when completing SRs and ScRs as an ECR. The study will also potentially improve SRs and ScRs methodologies by building on the very limited body of empirical research on challenges and barriers experienced by ECRs when conducting SRs and ScRs, so that they can make informed decisions about the methods and considerations required when completing these types of reviews.

Compensation: To thank me for my participation in the study, I will receive a summary of the findings and if I'd like to enter an email at the end of the interview, I will be given the option to enter my name in a draw to win one of four Starbucks gift cards valued at \$25. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries retrieved. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

We reserve the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

Confidentiality and anonymity: I have received assurance from the researchers that the information I will share will remain strictly confidential. I understand that the information I provide in the interview will only be used for describing the challenges and barriers encountered by ECRs when conducting SRs and/or ScRs. Because the interview will be conducted by Zoom by Lindsey Sikora from the University of Ottawa, my anonymity cannot be fully protected. Only Lindsey Sikora and her supervisor will know my identity, and I will not be asked to state my name in the interview. Any information that could potentially reveal my identity (e.g., name, specific position in the organization, years of experience) will be eliminated from the audio recording and transcript so that I cannot be identified in published reports or presentations. Lindsey Sikora will email me a copy of my interview transcript to review and revise prior to analyses. Lindsey Sikora will password-protect the transcript and will contact me directly to provide me with the password.

My name and email address that I provide when I enter the draw is collected for the purposes of contacting me if my name is selected in the draw. My name and the contact information I have provided will be kept confidential and then destroyed once the prizes have been awarded.

Conservation of data: The digital audio recording of the interview will be downloaded and erased from the audio-recorder immediately after the interview. All data will be stored in a locked research office at the University of Ottawa. All audio recordings will be stored on a password-protected computer. Only the members of the above-mentioned research team will have access to the data. Data will be conserved for five years after the publication of research findings. After this time, data will be shredded and appropriately discarded.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be deleted, destroyed, and not included in any publications or presentations.

Acceptance: I _____, agree to participate in the above-mentioned research study conducted by Lindsey Sikora, PhD (Education) candidate from the Faculty of Education, University of Ottawa under the supervision of Professor Katherine Moreau.

If I have any questions about the study, I may contact Lindsey Sikora or Katherine Moreau at:

Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5 (613) 562-5800 (ext. 8959)	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa at:

Tabaret Hall
550 Cumberland Street, Room 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Participant's signature:

Date:

Researcher's signature:

Date:

Appendix M ECRs letter of information for interviews in French

Lettres d'information pour les chercheurs en début de carrière (Phase 2 - Entretiens)

Université d'Ottawa / University of Ottawa

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Cher [insérer le nom du chercheur en début de carrière],

Vous êtes invité(e) à participer à un entretien individuel pour la phase 2 de l'étude susmentionnée.

L'objectif de l'étude est de mieux comprendre les défis et les obstacles auxquels sont confrontés les chercheurs en début de carrière et les bibliothécaires lorsqu'ils effectuent des revues systématiques et des revues de portée dans le domaine des sciences de la santé et de la médecine. Cette phase de la recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et des bibliothécaires lorsqu'ils effectuent ces méthodologies de revue. De plus, cette enquête permettra de déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils effectuent des revues systématiques et des revues de portée.

Si vous acceptez de participer à cette phase de l'étude, il vous sera demandé de prendre part à un entretien individuel. Nous avons l'intention d'interroger 10 à 15 chercheurs en début de carrière. L'entretien peut avoir lieu par Zoom à un moment qui vous convient. Nous vous demanderons de choisir un lieu privé et pratique pour l'entretien. Lindsey Sikora mènera alors l'entretien avec vous par Zoom depuis un bureau privé. L'entretien sera une session semi-structurée de type conversation. Au cours de l'entretien, on vous posera quelques questions ouvertes, en vous encourageant à commenter votre expérience concernant les défis et les obstacles, mais aussi les facteurs qui facilitent la réalisation des des revues systématiques et des revues de portée. Cela peut inclure des réflexions sur les méthodes, les processus, les attentes et les résultats ou tout ce que vous jugez pertinent. L'entretien durera environ 60 minutes. Avec votre consentement, l'entretien sera enregistré et transcrit par Lindsey Sikora ou un transcripteur professionnel pour analyse. Votre nom ne vous sera pas demandé au cours de l'entretien, afin de protéger votre anonymat. Lindsey Sikora mettra fin au recrutement lorsque 15 entretiens auront été réalisés. Les personnes interrogées seront sélectionnées selon le principe du "premier arrivé, premier servi".

Lindsey Sikora enverra un courriel à toutes les personnes non incluses dans la phase 2 pour leur expliquer que le projet a atteint sa capacité de participants et les remercier de s'être portées volontaires.

Il y a peu de risques associés à votre participation à cette étude. Certaines des questions de l'entretien peuvent vous mettre mal à l'aise car elles portent sur vos expériences et vos perceptions des défis et des obstacles, mais aussi des facteurs qui facilitent la réalisation des revues systématiques et des revues de portée. Vous n'êtes pas obligé de répondre aux questions qui vous mettent mal à l'aise. Vous pouvez refuser de participer à l'étude. Vos réponses, enregistrements et transcriptions resteront confidentiels.

Vous pouvez ou non bénéficier directement de la phase 2 de l'étude. L'étude suscitera une prise de conscience et une réflexion sur les défis et les obstacles que vous avez rencontrés lors de la réalisation des revues systématiques et des revues de portée en tant que chercheurs en début de carrière. L'étude permettra également d'améliorer les méthodologies des revues systématiques et des revues de portée en s'appuyant sur le corpus très limité de recherches empiriques sur les défis et les obstacles rencontrés par les chercheurs en début de carrière lors de la réalisation des revues systématiques et des revues de portée, afin qu'ils puissent prendre des décisions éclairées sur les méthodes et les considérations requises lors de la réalisation de ces types de revues. Pour vous remercier de votre participation à l'étude, vous recevrez un résumé des conclusions et, si vous le souhaitez, à la fin de l'entretien, vous aurez la possibilité d'inscrire votre nom dans un tirage au sort pour gagner l'une des quatre cartes-cadeaux Starbucks d'une valeur de 25 \$. Le tirage au sort est ouvert à tous les participants à la recherche qui inscrivent leur nom au tirage au sort, qu'ils décident ou non de ne plus participer au projet de recherche.

À la fin de l'étude, un nom sera tiré au sort parmi les personnes ayant participé et la personne dont le nom est tiré au sort sera informée par e-mail. Pour gagner le prix, la personne devra répondre correctement à une question réglementaire. Si la personne ne peut être jointe dans les 14 jours suivant la date du tirage au sort, le prix sera attribué au deuxième nom sélectionné au hasard et ainsi de suite jusqu'à ce que le prix soit attribué. Les chances de gagner un prix dépendront du nombre de participations admissibles récupérées. Le prix doit être accepté tel qu'il a été attribué ou perdu et ne peut être échangé contre de l'argent.

Votre nom et votre adresse électronique que vous fournissez lorsque vous participez au tirage au sort sont recueillis dans le but de vous contacter si votre nom est sélectionné dans le tirage au sort. Votre nom et les informations de contact que vous avez fournies resteront confidentiels et seront détruits une fois les prix attribués.

Nous nous réservons le droit d'annuler le tirage au sort ou d'annuler l'attribution du prix si l'intégrité du tirage au sort ou de la recherche ou la confidentialité des participants est compromise. Le tirage est régi par les lois applicables du Canada.

Les informations que vous partagez lors de l'entretien resteront strictement confidentielles. Les informations que vous fournirez lors de l'entrevue ne serviront qu'à décrire les défis et les obstacles rencontrés par les chercheurs en début de carrière lors de la réalisation de revues systématiques et des revues de portée. Étant donné que l'entretien sera mené par Zoom avec Lindsey Sikora, votre anonymat ne peut être entièrement protégé. Seuls Lindsey Sikora et son superviseur connaîtront votre identité, et il ne vous sera pas demandé de décliner votre nom au cours de l'entretien. Toute information susceptible de révéler votre identité (par exemple, votre nom, votre poste spécifique dans l'organisation, vos années d'expérience) sera effacée de l'enregistrement audio et de la transcription afin que vous ne puissiez pas être identifié dans les rapports ou présentations publiés. Nous vous enverrons par courriel une copie de la transcription de votre entretien afin que vous puissiez la lire et la réviser avant les analyses. La

transcription sera protégée par un mot de passe et nous vous contacterons directement pour vous fournir le mot de passe.

L'enregistrement audio numérique de l'entretien sera téléchargé et effacé de l'enregistreur audio immédiatement après l'entretien. Toutes les données seront conservées dans un bureau de recherche fermé à clé à l'Université d'Ottawa. Tous les enregistrements audio seront stockés sur un ordinateur protégé par un mot de passe dans le même bureau. Seuls les membres de l'équipe de recherche susmentionnée auront accès aux données. Les données seront conservées pendant cinq ans après la publication des résultats de la recherche. Après cette période, les données seront déchetées et éliminées de manière appropriée.

Votre participation à l'étude et à l'entretien est volontaire. Vous pouvez vous retirer de l'étude à tout moment et/ou refuser de répondre à toute question sans aucune conséquence négative. Si vous choisissez de vous retirer, toutes les données recueillies jusqu'au moment du retrait seront supprimées, détruites et ne figureront dans aucune publication ou présentation.

Si vous souhaitez participer à un entretien individuel dans le cadre de cette étude, veuillez contacter Lindsey Sikora avant le [insérer la date] pour obtenir des informations supplémentaires sur l'entretien. Comme indiqué, l'entretien aura lieu à un moment qui vous convient. Votre consentement écrit sera obtenu avant l'entretien. Nous vous enverrons par courrier électronique une copie du formulaire de consentement à lire, à signer et à renvoyer à Lindsey Sikora avant l'entretien. Le formulaire de consentement sera protégé par un mot de passe et nous vous contacterons directement pour vous fournir le mot de passe. Si vous choisissez de mener l'entretien par Zoom, vous pouvez imprimer et signer le formulaire de consentement, puis envoyer une copie électronique protégée par un mot de passe du formulaire de consentement rempli à Lindsey Sikora par courrier électronique ou lui envoyer une copie signée par courrier.

Si vous avez des questions concernant l'étude, veuillez contacter Lindsey Sikora ou Katherine Moreau, aux coordonnées ci-dessous. Si vous avez des questions concernant la conduite éthique de cette étude, vous pouvez contacter le responsable du protocole pour l'éthique dans la recherche, Université d'Ottawa à l'adresse suivante :

Salle Tabaret
550, rue Cumberland, salle 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Cordialement,

<p>Équipe de recherche:</p>	<p>Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5</p>	<p>Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)</p>
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Appendix N ECRs' interview consent form in French

Formulaire de consentement pour les chercheurs en début de carrière (Phase 2 - Entretiens)

Université d'Ottawa / University of Ottawa

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Invitation à participer : Je suis invité(e) à participer à une entrevue individuelle dans le cadre de l'étude de recherche susmentionnée menée par Lindsey Sikora, candidate au doctorat (éducation) de l'Université d'Ottawa sous la supervision de la professeure Katherine Moreau. Le Comité d'éthique de la recherche en sciences humaines de l'Université d'Ottawa a approuvé les composantes éthiques de ce projet.

Objectif de l'étude : Le but de l'étude est de mieux comprendre les défis et les obstacles auxquels font face les chercheurs en début de carrière et les bibliothécaires lorsqu'ils effectuent des revues systématiques et des revues de la portée en sciences de la santé et en médecine. Cette phase de la recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et des bibliothécaires lorsqu'ils effectuent ces méthodologies de revue. De plus, ces entrevues aideront à déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils effectuent des revues systématiques et des revues de portée.

Participation : Ma participation consistera à prendre part à un entretien individuel. L'entretien peut avoir lieu par Zoom à un moment qui me convient. Lindsey Sikora mènera ensuite l'entretien avec moi dans un bureau privé. L'entretien sera une session semi-structurée, de type conversation. Au cours de l'entretien, on me posera quelques questions ouvertes, m'encourageant à commenter mon expérience concernant les défis et les obstacles, mais aussi les facteurs facilitant la conduite des revues systématiques et des revues de portée. Cela peut inclure des réflexions sur les méthodes, les processus, les attentes et les résultats ou tout ce que je juge pertinent. L'entretien durera environ 60 minutes. Avec mon consentement, l'entretien sera enregistré et transcrit par Lindsey Sikora ou un transcripteur professionnel pour analyse. Je comprends que l'on ne me demandera pas mon nom au cours de l'entretien, afin de protéger mon anonymat.

Risques : Il y a peu de risques associés à ma participation à cette étude. Certaines des questions de l'entretien peuvent me mettre mal à l'aise, car elles portent sur mes expériences et mes perceptions des défis et des obstacles, mais aussi des facteurs qui facilitent la réalisation des revues systématiques et des

revues de la portée. Je ne suis pas obligé de répondre aux questions qui me mettent mal à l'aise. Je peux refuser de participer à l'étude. Mes réponses, le recodage et les transcriptions resteront confidentiels.

Avantages : Je peux ou non bénéficier directement de cette étude. L'étude suscitera une prise de conscience et une réflexion sur les défis et les obstacles que vous avez rencontrés lors de la réalisation des revues systématiques et des revues de la portée en tant que chercheur en début de carrière . L'étude permettra également d'améliorer les méthodologies des revues systématiques et des revues de la portée en s'appuyant sur le corpus très limité de recherches empiriques sur les défis et les obstacles rencontrés par les chercheurs en début de carrière lors de la réalisation de revues systématiques et des revues de la portée, afin qu'ils puissent prendre des décisions éclairées sur les méthodes et les considérations requises lors de la réalisation de ces types de revues.

Rémunération : Pour me remercier de ma participation à l'étude, je recevrai un résumé des conclusions et, si je le souhaite, à la fin de l'entretien, j'aurai la possibilité d'inscrire mon nom dans un tirage au sort pour gagner une des quatre cartes-cadeaux Starbucks d'une valeur de 25 \$. Le tirage au sort est ouvert à tous les participants à la recherche qui inscrivent leur nom au tirage au sort, qu'ils décident ou non de ne plus participer au projet de recherche.

À la fin de l'étude, un nom sera tiré au sort parmi les participants et la personne dont le nom est tiré au sort sera informée par courrier électronique. Pour gagner le prix, la personne devra répondre correctement à une question réglementaire. Si la personne ne peut être jointe dans les 14 jours suivant la date du tirage au sort, le prix sera attribué au deuxième nom sélectionné au hasard et ainsi de suite jusqu'à ce que le prix soit attribué. Les chances de gagner un prix dépendront du nombre de participations admissibles récupérées. Le prix doit être accepté tel qu'il a été attribué ou perdu et ne peut être échangé contre de l'argent.

Nous nous réservons le droit d'annuler le tirage au sort ou d'annuler l'attribution du prix si l'intégrité du tirage au sort ou de la recherche ou la confidentialité des participants est compromise. Le tirage est régi par les lois applicables du Canada.

Confidentialité et anonymat : J'ai reçu l'assurance des chercheurs que les informations que je partagerai resteront strictement confidentielles. Je comprends que les informations que je fournirai lors de l'entrevue ne seront utilisées que pour décrire les défis et les obstacles rencontrés par les chercheurs en début de carrière lors de la réalisation des revues systématiques et des revues de la portée. Étant donné que l'entrevue sera menée par Zoom par Lindsey Sikora de l'Université d'Ottawa, mon anonymat ne peut être entièrement protégé. Seule Lindsey Sikora et son superviseur connaîtront mon identité, et on ne me demandera pas de décliner mon nom au cours de l'entrevue. Toute information qui pourrait potentiellement révéler mon identité (par exemple, mon nom, le poste spécifique que j'occupe dans l'organisation, mes années d'expérience) sera éliminée de l'enregistrement audio et de la transcription afin que je ne puisse pas être identifié dans les rapports ou présentations publiés. Lindsey Sikora m'enverra par courriel une copie de la transcription de mon entretien afin que je puisse la lire et la réviser avant les analyses. Lindsey Sikora protégera la transcription par un mot de passe et me contactera directement pour me fournir ce mot de passe.

Mon nom et l'adresse électronique que je fournis lorsque je participe au tirage au sort sont recueillis dans le but de me contacter si mon nom est sélectionné dans le tirage au sort. Mon nom et les coordonnées que j'ai fournies seront gardés confidentiels puis détruits une fois les prix attribués.

Conservation des données : L'enregistrement audio numérique de l'entretien sera téléchargé et effacé de l'audio-enregistreur immédiatement après l'entretien. Toutes les données seront conservées dans un bureau de recherche fermé à clé à l'Université d'Ottawa. Tous les enregistrements audio seront sauvegardés sur un ordinateur protégé par un mot de passe. Seuls les membres de l'équipe de recherche susmentionnée auront accès aux données. Les données seront conservées pendant cinq ans après la publication des résultats de la recherche. Après cette période, les données seront déchetées et éliminées de manière appropriée.

Participation volontaire : Je n'ai aucune obligation de participer et si je choisis de participer, je peux me retirer de l'étude à tout moment et/ou refuser de répondre à toute question sans subir de conséquences négatives. Si je choisis de me retirer, toutes les données recueillies jusqu'au moment du retrait seront supprimées, détruites et ne seront pas incluses dans les publications ou les présentations.

Acceptation : Je, _____, accepte de participer à l'étude de recherche susmentionnée menée par Lindsey Sikora, candidate au doctorat (éducation) de la Faculté d'éducation de l'Université d'Ottawa sous la supervision de la professeure Katherine Moreau.

Si j'ai des questions sur l'étude, je peux contacter Lindsey Sikora ou Katherine Moreau aux coordonnées suivantes :

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Si j'ai des questions concernant la conduite éthique de cette étude, je peux contacter le responsable du protocole pour l'éthique de la recherche, Université d'Ottawa, à l'adresse suivante :

Pavillon Tabaret
550, rue Cumberland, pièce 156
Ottawa (Ontario) K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Il y a deux copies du formulaire de consentement, dont l'une est à conserver.

Signature du participant :

Date :

Signature du chercheur :

Date :

Appendix O Librarians' survey in English

Survey for Librarians (Part 1, Phase 1)

Understanding the challenges and barriers faced by librarians when collaborating or instructing systematic or scoping reviews

We would like to understand and measure your experiences when collaborating or instructing systematic or scoping review methodologies to researchers in the health sciences. We would like to know about your barriers or challenges experienced when participating or collaborating with systematic or scoping review project, and also when instructing researchers on these types of review methodologies. This survey uses several keywords. Here are the definitions of these keywords:

A **systematic review** attempts to identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question. Researchers conducting systematic reviews use explicit methods aimed at minimizing bias to produce more reliable findings that can be used to inform decision making (Higgins et al., 2019).

A **scoping review** is a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge (Arksey & O'Malley, 2005; Colquhoun et al, 2014).

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (**PRISMA**) is an evidence-based minimum set of items for reporting in systematic reviews and meta-analyses. PRISMA focuses on the reporting of reviews evaluating randomized trials but can also be used as a basis for reporting systematic reviews of other types of research, particularly evaluations of interventions (Moher et al., 2009).

I am adapting my survey from a previous survey done by Nicholson, McCrillis, and Williams (2017), as well as research completed by McKeown and Ross-White (2019).

36) I am a librarian serving a health sciences population.

- Yes
- No

If no, the survey ends.

37) How many total years have you worked as a librarian serving a health sciences population?

- 1-3 years
- 4-6 years
- 7-9 years
- Over 10 years
- I don't know

- 38) Have you ever completed or participated with a **systematic review** or **scoping review**?
- Yes, I have completed or participated with a **systematic review**
 - No, I have not completed or participated with a **systematic review**
 - Yes, I have completed or participated with a **scoping review**
 - No, I have not completed or participated with a **scoping review**
 - I have never completed or participated with either types of reviews

If the answer is no for both Question 3, survey ends.

- 39) How many **systematic reviews** have you completed as an investigator (besides providing assistance with searching)?
- I have only provided assistance to someone else who is creating a systematic review (i.e. searching)
 - 1–2
 - 3–5
 - 6–8
 - More than 8
 - I don't know
 - None

- 40) How many **scoping reviews** have you completed as an investigator (besides providing assistance with searching)?
- I have only provided assistance to someone else who is creating a scoping review (i.e. searching)
 - 1–2
 - 3–5
 - 6–8
 - More than 8
 - I don't know
 - None

If none for both questions 4 and 5, the survey ends.

- 41) Considering either your experience collaborating as an investigator on **systematic review** project(s) or assisting someone else with conducting a systematic review; how often were the following **METHODOLOGICAL BARRIERS/CHALLENGES** encountered? (*If you have never done a systematic review, please skip to question 7*).

	Never	Rarely	Often	Always	Not sure	N/A
Researcher was not really doing a systematic review, e.g., doing a narrative review.						
Researcher did not have a protocol.						

Researcher did not have one clear answerable question.						
Question was defined too broadly						
Question was defined too narrowly.						
Researcher did not have inclusion/exclusion criteria established at the beginning of process.						
Researcher was not using PRISMA (or a PRISMA-extension).						
Researcher was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.						
Researcher was not using two screeners.						
Researcher was not tracking reasons for exclusion.						
Researcher did not want to evaluate study quality as part of process (critical appraisal or risk of bias).						
Researcher did not have or follow a data extraction plan.						

42) What other **METHODOLOGICAL BARRIERS/CHALLENGES** have you encountered during a **systematic review** project(s)? Describe them below.

43) Considering either your experience collaborating on **scoping review** project(s) or assisting someone else with conducting a systematic review; how often were the following **METHODOLOGICAL BARRIERS/CHALLENGES** encountered?

	Never	Rarely	Often	Always	Not sure	N/A
Researcher was not really doing a systematic review, e.g., doing a narrative review.						
Researcher did not have a protocol.						
Researcher did not have one clear answerable question.						
Question was defined too broadly						
Question was defined too narrowly.						
Researcher did not have inclusion/exclusion criteria established at the beginning of process.						
Researcher was not using PRISMA (or a PRISMA-extension).						
Researcher was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.						

Researcher was not using two screeners.						
Researcher was not tracking reasons for exclusion.						
Researcher did not want to evaluate study quality as part of process (critical appraisal or risk of bias).						
Researcher did not have or follow a data extraction plan.						

44) What other **METHODOLOGICAL BARRIERS/CHALLENGES** have you encountered during a **scoping review** project(s)? Describe them below.

45) What strategies have you used to handle these **METHODOLOGICAL BARRIERS/CHALLENGES** during a systematic or scoping review project(s)? Please describe them below.

46) Considering either your experience collaborating on **systematic review** projects or assisting someone else with conducting a **systematic review**, how often were the following **INTERPERSONAL BARRIERS/CHALLENGES** encountered?

	Never	Rarely	Often	Always	Not sure	N/A
Research team could not agree on question.						
A student was leading the project.						
The student's faculty mentor was not helpful.						
Researcher refused request for authorship.						
The research team had too many members.						
The research team had too few members.						
The research team was dysfunctional.						
Researcher considered you only as a PDF supplier or provider of administrative tasks.						
Researcher had unreasonable time expectations.						
Research team could not agree on search terms.						
Communication issues between librarian and researcher.						
Communication issues between other research team members.						
My role as librarian was not valued.						

47) What other INTERPERSONAL BARRIERS/CHALLENGES have you encountered during a **systematic review** project(s)? Describe them below.

48) Considering either your experience collaborating on **scoping review** projects or assisting someone else with conducting a **scoping review**, how often were the following INTERPERSONAL BARRIERS/CHALLENGES encountered?

	Never	Rarely	Often	Always	Not sure	N/A
Research team could not agree on question.						
A student was leading the project.						
The student's faculty mentor was not helpful.						
Researcher refused request for authorship.						
The research team had too many members.						
The research team had too few members.						
The research team was dysfunctional.						
Researcher considered you only as a PDF supplier or provider of administrative tasks.						
Researcher had unreasonable time expectations.						
Research team could not agree on search terms.						
Communication issues between librarian and researcher.						
Communication issues between other research team members.						

49) What other INTERPERSONAL BARRIERS/CHALLENGES have you encountered during a **scoping review** project(s)? Describe them below.

50) What strategies have you used to handle the INTERPERSONAL BARRIERS/CHALLENGES during a systematic or scoping review project(s)? Please describe them below.

51) For the challenges listed below, please drag and rank the top 5 most barriers or challenges when conducting or participating in a **systematic review**, based on your experience (1 is most challenging, 2 is next most challenging, etc.).

Challenges	Ranking
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Researcher was not really doing a systematic review, e.g., doing a narrative review.	
Researcher did not have a protocol.	
Researcher did not have one clear answerable question.	
Question was defined too broadly	
Question was defined too narrowly.	
Researcher did not have inclusion/exclusion criteria established at the beginning of process.	
Researcher was not using PRISMA (or a PRISMA-extension).	
Researcher was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	
Researcher was not using two screeners.	
Researcher was not tracking reasons for exclusion.	
Researcher did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	
Researcher did not have or follow a data extraction plan.	
Research team could not agree on question.	
A student was leading the project.	
The student's faculty mentor was not helpful.	
Researcher refused request for authorship.	
The research team had too many members.	
The research team had too few members.	
The research team was dysfunctional.	
Researcher considered you only as a PDF supplier or provider of administrative tasks.	
Researcher had unreasonable time expectations.	
Research team could not agree on search terms.	
Communication issues between librarian and researcher.	
Communication issues between other research team members.	

52) For the challenges listed below, please drag and rank the top 5 most barriers or challenges when conducting or participating in a **scoping review**, based on your experience (1 is most challenging, 2 is next most challenging, etc.).

Challenges	Ranking
Researcher was not really doing a scoping review, e.g., doing a narrative review.	
Researcher did not have a protocol.	
Researcher did not have one clear answerable question.	
Question was defined too broadly	
Question was defined too narrowly.	
Researcher did not have inclusion/exclusion criteria established at the beginning of process.	
Researcher was not using PRISMA (or a PRISMA-extension).	
Researcher was not using two-step screening process, i.e., first reviewing title/abstract then full-text articles.	
Researcher was not using two screeners.	
Researcher was not tracking reasons for exclusion.	
Researcher did not want to evaluate study quality as part of process (critical appraisal or risk of bias).	
Researcher did not have or follow a data extraction plan.	
Research team could not agree on question.	
A student was leading the project.	
The student's faculty mentor was not helpful.	
Researcher refused request for authorship.	
The research team had too many members.	
The research team had too few members.	
The research team was dysfunctional.	
Researcher considered you only as a PDF supplier or provider of administrative tasks.	
Researcher had unreasonable time expectations.	

Research team could not agree on search terms.	
Communication issues between librarian and researcher.	
Communication issues between other research team members.	

53) Considering your experience teaching systematic review or scoping review methods, what topics have you instructed? Please check all that apply.

- What a systematic review and/or a scoping review is (i.e. overall principles)
- How to manage expectations of the review team
- How to identify if a review or protocol on the same topic already exists
- How to formulate or refine a review question
- How to use PRISMA (or appropriate extensions)
- How to use appropriate database or resource-specific search methods and techniques
- How to search subject headings and key terms appropriate to a specific database or resource
- How to set up search alerts for new publications
- How to use citation management or review software
- How to search the grey literature
- How to search using additional methods for locating studies (i.e. searching trial registries, searching cited references, handsearching)
- How search methods should be reported for reproducibility and transparency purposes
- None of the above. I have never taught about systematic or scoping reviews (skip to question 23)

54) If you have other topics related to instructing **systematic reviews**, please describe them below.

55) If you have other topics related to instructing **scoping reviews**, please describe them below.

56) For the INSTRUCTIONAL BARRIERS/CHALLENGES listed below, please drag and rank the top 5 most barriers or challenges to instruct **systematic or scoping reviews** based on your experience (1 is most challenging, 2 is next most challenging, etc.).

Challenges	Ranking
What a systematic review is (i.e. overall principles)	
What a scoping review is (i.e. overall principles)	

How to manage expectations of the review team	
How to identify if a review or protocol on the same topic already exists	
How to write a protocol for a systematic review	
How to write a protocol for a scoping review	
How to formulate or refine a review question	
How to use appropriate database or resource-specific search methods and techniques	
How to search subject headings and key terms appropriate to a specific database or resource	
How to set up search alerts for new publications	
How to use citation management or review software	
How to search the grey literature	
How to search using additional methods for locating studies (i.e. searching trial registries, searching cited references, handsearching)	
How to create and design proper data extraction sheets	
How search methods should be reported for reproducibility and transparency purposes	

57) What other INSTRUCTIONAL BARRIERS/CHALLENGES have you encountered when instructing a **systematic review** workshop/course? Describe them below.

58) What other INSTRUCTIONAL BARRIERS/CHALLENGES have you encountered when instructing a **scoping review** workshop/course? Describe them below.

59) What strategies have you used to handle these INSTRUCTIONAL BARRIERS/CHALLENGES have you encountered when instructing a systematic or scoping review workshop/course? Please list them below.

60) Have you attended any professional development courses on **systematic reviews**?

- Yes, it was a section of a course or workshop I was taking
- Yes, the entire course was about it

- No, nothing in the course was about it
- I'm not sure
- Not applicable

61) Have you attended any professional development courses on **scoping reviews**?

- Yes, it was a section of a course or workshop I was taking
- Yes, the entire course was about it
- No, nothing in the course was about it
- I'm not sure
- Not applicable

62) What is the primary health sciences population that you provide assistance to or collaborate with?

- Medicine (including all subspecialties)
- Epidemiology and Public Health
- Nursing
- Dentistry
- Rehabilitation (i.e. occupational therapy, physical therapy, speech language pathology)
- Medical education or health professions education
- Bench sciences (i.e. neuroscience, molecular biology, biochemistry, etc.)
- Psychology
- Other (please specify): _____

63) What type of library do you work in?

- Hospital
- Academic
- Government
- Industry/Business
- Self-employed
- Not currently working
- Other (Please Specify): _____

64) Would you be interested in participating in a follow-up interview for this study?

- Yes, please e-mail additional information to me
- Maybe, please e-mail additional information to me
- No, not at this time

If a respondent selects "Yes" or "Maybe", they will be asked to provide their email address.

65) Would you be interested in being entered into a draw for a chance to win a \$25 Starbucks gift card?

- Yes
- No

If a respondent selects "Yes", they will be asked to provide their email address.

66) Would you be interested in receiving a summary of the survey results?

Yes

No

If a respondent selects “Yes”, they will be asked to provide their email address.

Thank you for participation!

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Sondage pour les bibliothécaires (partie 1, phase 1)

Comprendre les défis et les obstacles rencontrés par les bibliothécaires lorsqu'ils collaborent ou enseignent des revues systématiques ou de la portée

Nous aimerions comprendre et mesurer vos expériences lorsque vous collaborez ou enseignez des méthodologies de revue systématique ou de la portée à des chercheurs en sciences de la santé. Nous aimerions connaître les obstacles ou les défis que vous rencontrez lorsque vous participez ou collaborez à un projet de revue systématique ou de la portée, et lorsque vous enseignez aux chercheurs ces types de méthodologies de revue. Cette enquête utilise plusieurs mots clés. Voici les définitions de ces mots clés :

Une **revue systématique** tente d'identifier, d'évaluer et de synthétiser toutes les preuves empiriques qui répondent à des critères d'éligibilité prédéfinis pour répondre à une question de recherche donnée. Les chercheurs qui effectuent des revues systématiques utilisent des méthodes explicites visant à minimiser les biais afin de produire des résultats plus fiables qui peuvent être utilisés pour éclairer la prise de décision (Higgins et coll., 2019).

Une **revue de la portée (« scoping review »)** est une forme de synthèse des connaissances qui aborde une question de recherche exploratoire visant à identifier les concepts clés, les types de preuves et les lacunes dans la recherche liée à un domaine ou à un secteur défini, en recherchant, sélectionnant et synthétisant systématiquement les connaissances existantes (Arksey & O'Malley, 2005 ; Colquhoun et coll., 2014).

Un **chercheur en début de carrière** est défini comme un chercheur ou un professionnel dans son domaine d'étude actuel pendant 5 ans ou moins. Cela inclut les personnes qui sont proches du début de leur deuxième ou troisième carrière.

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) sont des lignes directrices basées sur des données probantes pour les revues systématiques et les méta-analyses. PRISMA se concentre sur les rapports des revues évaluant des essais randomisés, mais peut également servir de base pour les rapports des revues systématiques d'autres types de recherche, en particulier les évaluations d'interventions (Moher et coll., 2009).

- 1) Je suis un bibliothécaire au service d'une population spécialisée dans les sciences de la santé.
- Oui
 - Non

Si non, le sondage se termine.

- 2) Combien d'années au total avez-vous travaillé en tant que bibliothécaire au service d'une population spécialisée dans les sciences de la santé ?
- 1-3 ans
 - 4-6 ans

- 7-9 ans
- Plus de 10 ans
- Je ne sais pas

3) Combien de **revues systématiques** avez-vous réalisées en tant qu'enquêteur (outre l'aide à la recherche) ?

- Je n'ai apporté mon aide qu'à une autre personne qui crée une revue systématique (par exemple : recherche dans les bases de données)
- 1-2
- 3-5
- 6-8
- Plus de 8
- Je ne sais pas
- Aucune

4) Combien de **revues de la portée** avez-vous effectuées en tant qu'enquêteur (outre l'aide à la recherche) ?

- Je n'ai fourni une assistance qu'à une autre personne qui crée une revue de la portée (par exemple : recherche dans les bases de données)
- 1-2
- 3-5
- 6-8
- Plus de 8
- Je ne sais pas
- Aucune

S'il n'y a pas d'expérience pour les questions 4 et 5, le sondage se termine.

5) Si l'on considère votre expérience de collaboration en tant que chercheur ou d'assistance sur un ou plusieurs projets de **revue systématique**, à quelle fréquence les **OBSTACLES/DÉFIS MÉTHODOLOGIQUES** suivants ont-ils été rencontrés ? (Si vous n'avez jamais effectué de revue systématique, veuillez passer à la question 7.)

	Jamais	Rarement	Souvent	Toujours	Incertain	Sans objet
Le (la) chercheur n'effectuait pas vraiment de revue systématique, par exemple une revue narrative.						
Le (la) chercheur n'avait pas de protocole.						
Le (la) chercheur n'avait pas une seule question à laquelle il pouvait répondre clairement.						
La question était définie de manière trop large.						

La question a été définie de manière trop étroite.						
Le (la) chercheur n'avait pas de critères d'inclusion/exclusion établis au début du processus.						
Le (la) chercheur n'utilisait pas PRISMA (ou une extension de PRISMA).						
Le (la) chercheur n'a pas utilisé le processus de sélection en deux étapes, c'est-à-dire qu'il a d'abord examiné le titre/résumé puis le texte intégral des articles.						
Le (la) chercheur n'utilisait pas deux filtres.						
Le (la) chercheur ne cherchait pas les raisons de son exclusion.						
Le (la) chercheur ne voulait pas évaluer la qualité de l'étude dans le cadre du processus (évaluation critique ou risque de partialité).						
Le (la) chercheur n'avait pas ou ne suivait pas de plan d'extraction des données.						

6) Quels autres OBSTACLES/DÉFIS MÉTHODOLOGIQUES avez-vous rencontrés au cours d'un ou plusieurs projets de **revue systématique** ? Décrivez-les ci-dessous.

7) Compte tenu de votre expérience de collaboration à un ou plusieurs projets de **revue de la portée** ou d'assistance à une autre personne pour la réalisation d'une revue systématique, à quelle fréquence avez-vous rencontré les OBSTACLES/DÉFIS MÉTHODOLOGIQUES suivants ?

	Jamais	Rarement	Souvent	Toujours	Incertain	Sans objet
Le (la) chercheur n'effectuait pas vraiment de revue systématique, par exemple une revue narrative.						
Le (la) chercheur n'avait pas de protocole.						
Le (la) chercheur n'avait pas une seule question à laquelle il pouvait répondre clairement.						
La question était définie de manière trop large.						

La question a été définie de manière trop étroite.						
Le (la) chercheur n'avait pas de critères d'inclusion/exclusion établis au début du processus.						
Le (la) chercheur n'utilisait pas PRISMA (ou une extension de PRISMA).						
Le (la) chercheur n'a pas utilisé le processus de sélection en deux étapes, c'est-à-dire qu'il a d'abord examiné le titre/résumé puis le texte intégral des articles.						
Le (la) chercheur n'utilisait pas deux filtres.						
Le (la) chercheur ne cherchait pas les raisons de son exclusion.						
Le (la) chercheur ne voulait pas évaluer la qualité de l'étude dans le cadre du processus (évaluation critique ou risque de partialité).						
Le (la) chercheur n'avait pas ou ne suivait pas de plan d'extraction des données.						

8) Quels autres OBSTACLES/DÉFIS MÉTHODOLOGIQUES avez-vous rencontrés au cours d'un ou plusieurs projets de **revue de la portée** ? Décrivez-les ci-dessous.

9) Quelles stratégies avez-vous utilisées pour faire face à ces OBSTACLES/DÉFIS MÉTHODOLOGIQUES au cours d'un ou plusieurs projets de revue systématique ou de la portée ? Veuillez les décrire ci-dessous.

10) Compte tenu de votre expérience de collaboration à des projets de **revue systématique** ou d'assistance à quelqu'un d'autre pour la réalisation d'une revue systématique, à quelle fréquence avez-vous rencontré les OBSTACLES/DÉFIS INTERPERSONNELS suivants ?

	Jamais	Rarement	Souvent	Toujours	Incertain
L'équipe de recherche n'a pas pu s'entendre sur la question.					
Un étudiant/une étudiante dirigeait le projet.					
Le (la) mentor de l'étudiant(e) n'a pas été d'une grande aide.					
Le (la) chercheur a refusé la demande de publication.					

L'équipe de recherche comprenait trop de membres.					
L'équipe de recherche comprenait trop peu de membres.					
L'équipe de recherche était dysfonctionnelle.					
Le (la) chercheur vous a considéré uniquement comme un (une) fournisseur de PDF ou de tâches administratives.					
Le (la) chercheur avait des attentes déraisonnables en matière de temps.					
L'équipe de recherche n'a pas pu s'entendre sur les termes de recherche.					
Problèmes de communication entre le (la) bibliothécaire et le (la) chercheur.					
Problèmes de communication entre les autres membres de l'équipe de recherche.					
Mon rôle de bibliothécaire n'a pas été valorisé.					

11) Quels autres OBSTACLES/DÉFIS INTERPERSONNELS avez-vous rencontrés au cours d'un ou plusieurs projets de **revue systématique** ? Décrivez-les ci-dessous.

12) Compte tenu de votre expérience de collaboration à des projets de **revue de la portée** ou d'assistance dans la conduite d'une revue de la portée, à quelle fréquence les OBSTACLES/DÉFIS INTERPERSONNELS suivants ont-ils été rencontrés ?

	Jamais	Rarement	Souvent	Toujours	Incertain
L'équipe de recherche n'a pas pu s'entendre sur la question.					
Un étudiant/une étudiante dirigeait le projet.					
Le (la) mentor de l'étudiant(e) n'a pas été d'une grande aide.					
Le (la) chercheur a refusé la demande de publication.					
L'équipe de recherche comprenait trop de membres.					
L'équipe de recherche comprenait trop peu de membres.					
L'équipe de recherche était dysfonctionnelle.					
Le (la) chercheur vous a considéré uniquement comme un (une) fournisseur de PDF ou de tâches administratives.					

Le (la) chercheur avait des attentes déraisonnables en matière de temps.					
L'équipe de recherche n'a pas pu s'entendre sur les termes de recherche.					
Problèmes de communication entre le (la) bibliothécaire et le (la) chercheur.					
Problèmes de communication entre les autres membres de l'équipe de recherche.					
Mon rôle de bibliothécaire n'a pas été valorisé.					

13) Quels autres OBSTACLES/DÉFIS INTERPERSONNELS avez-vous rencontrés au cours d'un ou plusieurs projets de **revue de la portée** ? Décrivez-les ci-dessous.

14) Quelles stratégies avez-vous utilisées pour gérer les OBSTACLES/DÉFIS INTERPERSONNELS au cours d'un ou plusieurs projets de revue systématique ou de portée ? Veuillez les décrire ci-dessous.

15) Pour les défis énumérés ci-dessous, veuillez faire glisser et classer les 5 obstacles ou défis les plus importants lors de la réalisation ou de la participation en fonction de votre expérience (1 est le plus difficile, 2 est le suivant, etc.).

Défis	Classement
Le (la) chercheur ne faisait pas vraiment une revue systématique, par exemple une revue narrative.	
Le (la) chercheur n'avait pas de protocole.	
Le (la) chercheur n'avait pas une seule question à laquelle il pouvait répondre clairement.	
La question était définie de manière trop générale.	
La question a été définie de manière trop restrictive.	
Le (la) chercheur n'a pas fait établir de critères d'inclusion/exclusion au début du processus.	
Le (la) chercheur n'utilisait pas PRISMA (ou une extension de PRISMA).	
Le (la) chercheur n'a pas utilisé le processus de sélection en deux étapes, c'est-à-dire qu'il a d'abord examiné le titre/résumé puis le texte intégral des articles.	
Le (la) chercheur n'utilisait pas deux filtres.	

Le (la) chercheur n'indiquait pas les raisons d'exclusion.	
Le (la) chercheur ne voulait pas évaluer la qualité de l'étude dans le cadre du processus (évaluation critique ou risque de partialité).	
Le (la) chercheur ne disposait pas d'un plan d'extraction des données ou ne le suivait pas.	
L'équipe de recherche n'a pas pu s'entendre sur la question.	
Un étudiant/une étudiante dirigeait le projet.	
Le (la) mentor de l'étudiant(e) n'a pas été d'une grande aide.	
Le (la) chercheur a refusé la demande de publication.	
L'équipe de recherche comprenait trop de membres.	
L'équipe de recherche comprenait trop peu de membres.	
L'équipe de recherche était dysfonctionnelle.	
Le (la) chercheur vous considérait uniquement comme un (une) fournisseur de PDF ou de tâches administratives.	
Le (la) chercheur avait des attentes déraisonnables en matière de temps.	
L'équipe de recherche n'a pas pu s'entendre sur les termes de recherche.	
Problèmes de communication entre le (la) bibliothécaire et le (la) chercheur.	
Problèmes de communication entre les autres membres de l'équipe de recherche.	

16) Pour les défis énumérés ci-dessous, veuillez faire glisser et classer les 5 obstacles ou défis les plus importants lors de la réalisation ou de la participation à **une revue de portée**, en fonction de votre expérience (1 est le plus difficile, 2 est le suivant, etc.).

Défis	Classement
Le (la) chercheur ne faisait pas vraiment une revue de la portée, par exemple une revue narrative.	
Le (la) chercheur n'avait pas de protocole.	

Le (la) chercheur n'avait pas une seule question à laquelle il pouvait répondre clairement.	
La question était définie de manière trop générale.	
La question a été définie de manière trop restrictive.	
Le (la) chercheur n'a pas fait établir de critères d'inclusion/exclusion au début du processus.	
Le (la) chercheur n'utilisait pas PRISMA (ou une extension de PRISMA).	
Le (la) chercheur n'a pas utilisé le processus de sélection en deux étapes, c'est-à-dire qu'il a d'abord examiné le titre/résumé puis le texte intégral des articles.	
Le (la) chercheur n'utilisait pas deux filtres.	
Le (la) chercheur n'indiquait pas les raisons d'exclusion.	
Le (la) chercheur ne voulait pas évaluer la qualité de l'étude dans le cadre du processus (évaluation critique ou risque de partialité).	
Le (la) chercheur ne disposait pas d'un plan d'extraction des données ou ne le suivait pas.	
L'équipe de recherche n'a pas pu s'entendre sur la question.	
Un étudiant/une étudiante dirigeait le projet.	
Le (la) mentor de l'étudiant(e) n'a pas été d'une grande aide.	
Le (la) chercheur a refusé la demande de publication.	
L'équipe de recherche comprenait trop de membres.	
L'équipe de recherche comprenait trop peu de membres.	
L'équipe de recherche était dysfonctionnelle.	
Le (la) chercheur vous considérait uniquement comme un (une) fournisseur de PDF ou de tâches administratives.	

Le (la) chercheur avait des attentes déraisonnables en matière de temps.	
L'équipe de recherche n'a pas pu s'entendre sur les termes de recherche.	
Problèmes de communication entre le (la) bibliothécaire et le (la) chercheur.	
Problèmes de communication entre les autres membres de l'équipe de recherche.	

17) Compte tenu de votre expérience dans l'enseignement des méthodes de **revue systématique** ou de **revue de portée**, quels sont les sujets que vous avez enseignés ? Veuillez cocher toutes les réponses qui s'appliquent.

- Qu'est-ce qu'une revue systématique et/ou une revue de la portée (c'est-à-dire les principes généraux)
- Comment gérer les attentes de l'équipe de la revue
- Comment déterminer s'il existe déjà une revue ou un protocole sur le même sujet
- Comment formuler ou raffiner une question de revue
- Comment utiliser PRISMA (ou les extensions appropriées)
- Comment utiliser les méthodes et techniques de recherche appropriées dans les bases de données ou les ressources
- Comment rechercher des vedettes-matières et des mots clés appropriés à une base de données ou une ressource spécifique
- Comment mettre en place des alertes de recherche pour les nouvelles publications
- Comment utiliser le logiciel de gestion bibliographique ou le logiciel de revue des citations
- Comment rechercher la littérature grise
- Comment effectuer des recherches en utilisant des méthodes supplémentaires pour localiser les études (c'est-à-dire la recherche dans les registres d'essais cliniques, la recherche de références citées, la recherche manuelle)
- Comment les méthodes de recherche doivent-elles être signalées à des fins de reproductibilité et de transparence
- Aucune de ces réponses. Je n'ai jamais enseigné les revues systématiques ou de portée (*passez à la question 23*).

18) Si vous avez d'autres sujets liés à l'instruction des **revues systématiques**, veuillez les décrire ci-dessous.

19) Si vous avez d'autres sujets liés à l'instruction des **revues de la portée**, veuillez les décrire ci-dessous.

20) Pour les OBSTACLES/DÉFIS INSTRUCTIFS énumérés ci-dessous, veuillez faire glisser et classer les 5 obstacles ou défis les plus importants pour ordonner des **revues systématiques ou de la portée** en fonction de votre expérience (1 est le plus difficile, 2 est le suivant, etc.).

Défis	Classement
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Ce qu'est une revue systématique (c'est-à-dire les principes généraux)	
Ce qu'est une revue de portée (c'est-à-dire les principes généraux)	
Comment gérer les attentes de l'équipe de la revue	
Comment déterminer s'il existe déjà une revue ou un protocole sur le même sujet	
Comment rédiger un protocole pour une revue systématique	
Comment rédiger un protocole pour une revue de portée	
Comment formuler ou préciser une question de revue	
Comment utiliser les méthodes et techniques de recherche appropriées dans les bases de données ou les ressources	
Comment rechercher des vedettes-matières et des mots clés appropriés à une base de données ou une ressource spécifique	
Comment mettre en place des alertes de recherche pour les nouvelles publications	
Comment utiliser le logiciel de gestion bibliographique ou de revue de citations	
Comment faire une recherche dans la littérature grise	
Comment effectuer des recherches en utilisant des méthodes supplémentaires pour localiser les études (c'est-à-dire la recherche dans les registres d'essais cliniques, la recherche de références citées, la recherche manuelle)	
Comment créer et concevoir des fiches d'extraction de données appropriées	
Comment les méthodes de recherche doivent-elles être signalées à des fins de reproductibilité et de transparence	

21) Quels autres OBSTACLES/DÉFIS INSTRUCTIFS avez-vous rencontrés en donnant un atelier/cours de **revue systématique** ? Décrivez-les ci-dessous.

22) Quels autres OBSTACLES/DÉFIS INSTRUCTIFS avez-vous rencontrés lorsque vous avez donné un atelier/cours sur la **revue de la portée** ? Décrivez-les ci-dessous.

23) Quelles stratégies avez-vous utilisées pour faire face à ces OBSTACLES/DÉFIS INSTRUCTIFS que vous avez rencontrés en donnant un atelier/cours sur la revue systématique ou la revue de la portée ? Veuillez les énumérer ci-dessous.

24) Avez-vous suivi des cours de perfectionnement professionnel sur les **revues systématiques** ?

- Oui, c'était une section d'un cours ou d'un atelier que je suivais
- Oui, tout le cours portait sur ce sujet
- Non, il n'y avait rien à ce sujet dans le cours
- Incertain
- Sans objet

25) Avez-vous suivi des cours de perfectionnement professionnel sur les **revues de la portée** ?

- Oui, c'était une section d'un cours ou d'un atelier que je suivais
- Oui, tout le cours portait sur ce sujet
- Non, il n'y avait rien à ce sujet dans le cours
- Incertain
- Sans objet

26) Quelle est la population des sciences de la santé primaire à laquelle vous apportez votre aide ou avec laquelle vous collaborez ?

- Médecine (y compris toutes les sous-spécialités)
- Épidémiologie et santé publique
- Soins infirmiers
- Dentisterie
- Réadaptation (par exemple : ergothérapie, physiothérapie, orthophonie)
- Enseignement médical ou formation aux professions de la santé
- Les sciences de banc (par exemple : les neurosciences, la biologie moléculaire, la biochimie, etc.
- Psychologie
- Autre (veuillez préciser) : _____

27) Dans quel type de bibliothèque travaillez-vous ?

- Hôpital
- Académique
- Gouvernement
- Industrie/Commerce
- Indépendant(e)s
- Ne travaille pas actuellement
- Autre (veuillez préciser) : _____

28) Souhaitez-vous participer à un entretien de suivi pour cette étude ?

- Oui, veuillez m'envoyer des informations complémentaires par courrier électronique
- Peut-être, veuillez m'envoyer des informations complémentaires par courriel
- Non, pas pour le moment

Si un répondant ou une répondante choisit « Oui » ou « Peut-être », on lui demandera de fournir son adresse électronique.

29) Souhaitez-vous participer à un tirage au sort pour avoir une chance de gagner une carte cadeau Starbucks de 25 \$?

- Oui
- Non

Si un répondant ou une répondante choisit « Oui », on lui demandera de fournir son adresse électronique.

30) Souhaitez-vous recevoir un résumé des résultats de l'enquête ?

- Oui
- Non

Si un répondant ou une répondante choisit « Oui », on lui demandera de fournir son adresse électronique.

Merci pour votre participation !

Références

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Appendix Q Librarians' letter of information for the survey in English

Letter of Information for Librarians (Phase 1 – Survey)



Université d'Ottawa / University of Ottawa

1st Emailing – Initial Request

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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You are invited to take part in the above-mentioned two-phase research study conducted by Lindsey Sikora, PhD candidate from the University of Ottawa under the supervision of Professor Katherine Moreau.

The purpose of the study is to better understand the perceived challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, this survey will help determine how librarians can better support ECRs when conducting SRs and ScRs.

For Phase 1 of the study, you are invited to complete the attached survey. The survey contains a range of questions about your experience when collaborating or conducting SRs and ScRs, as well as when you instruct researchers through workshops or training for these reviews. In particular, it asks about **your** perceptions of and experiences with challenges and barriers you have encountered when completing SRs and ScRs as a librarian, as well as issues that arise when you instruct researchers about these reviews. It also contains some demographic questions. The survey will take approximately **15 minutes** to complete. We ask that you complete the survey online using the following <https://www.surveymonkey.ca/r/LibsEnglish> by **[insert date of completion]**. **By selecting "I agree" on the survey platform, you are consenting to participate in Phase 1 of this study.**

There is little risk associated with your involvement in Phase 1 of the study. Some of the items and questions on the survey may make you feel uncomfortable because they ask about your perceptions of and experiences with challenges and barriers you have encountered when completing SRs and ScRs as a librarian, as well as issues that arise when you instruct researchers about these reviews. You do not have to respond to any items or answer questions that make you feel uncomfortable.

You may or may not benefit directly from Phase 1 of the study. The study will generate awareness and reflection about the challenges and barriers you have encountered when completing or collaborating on SRs and ScRs as a librarian. The study will also potentially improve SRs and ScRs methodologies by building on the very limited body of empirical research on challenges and barriers experienced by ECRs and/or librarians when conducting SRs and ScRs, so that they can make informed decisions about the methods and considerations required when completing these types of reviews. To thank you for your participation in the study, you will receive a summary of the findings and if you'd like to enter an email at the end of the survey, you will be given the option to enter your name in a draw to win one of four Starbucks gift cards valued at \$25. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries retrieved. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name and email address that you provide when you enter the draw is collected for the purposes of contacting you if your name is selected in the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prizes have been awarded.

We reserve the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

The questionnaire survey is designed so that your identity will remain strictly confidential and anonymous. Your responses to the survey will only be used for describing the challenges and barriers encountered by librarians when collaborating or conducting SRs and/or ScRs, as well as issues that arise when you instruct researchers about these reviews.

If you are interested in participating in Phase 2 of this project, the survey will ask you to provide your name and email address. This information will not be combined with your survey responses. It will only be used for recruitment purposes if you are interested in participating in

Phase 2. Your survey responses will be combined with other responses so that you cannot be identified in published reports or presentations. Also, any written responses that could potentially reveal your identity (e.g., name, town, or region) will be blacked out from the survey and not included in the database.

Completed surveys will be stored on a password-protected computer in a University of Ottawa research office. Only the members of the above-mentioned research team will have access to the questionnaire surveys. Data will be conserved for five years after the publication of research findings. After this time, data will be shredded and appropriately discarded.

The completion of this survey is **voluntary**. Once the survey is submitted, participants will be unable to withdraw their data from the study as the researchers will be unable to retrace individual datasets.

If you have any questions about the study please contact Lindsey Sikora or Katherine Moreau, at the coordinates below. If you have any questions regarding the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa at:

Tabaret Hall
550 Cumberland Street, Room 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Sincerely,

Research Team:	Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Appendix R Librarians' letter of information for the survey in French

Lettre d'information pour les bibliothécaires (Phase 1 - Sondage)

Université d'Ottawa / University of Ottawa
1er envoi par courriel - Demande préliminaire

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Vous êtes invité à participer à l'étude de recherche en deux phases mentionnée ci-dessus, menée par Lindsey Sikora, doctorante de l'Université d'Ottawa, sous la supervision de la professeur Katherine Moreau.

L'objectif de l'étude est de mieux comprendre les défis et les obstacles perçus auxquels sont confrontés les chercheurs en début de carrière et les bibliothécaires lorsqu'ils (elles) effectuent des revues systématiques et des revues de la portée en sciences de la santé et en médecine. Cette phase de recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et les bibliothécaires lors de l'exécution de ces revues. De plus, cette enquête permettra de déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils (elles) réalisent des revues systématiques et des revues de la portée.

Pour la première phase de l'étude, vous êtes invité à remplir le sondage ci-joint. Le sondage contient une série de questions sur votre expérience en matière de collaboration ou de conduite de revues systématique et de la portée, ainsi que lorsque vous instruisez des chercheurs dans le cadre d'ateliers ou de formations pour ces revues. En particulier, il s'agit de connaître votre perception et votre expérience des défis et des obstacles que vous avez rencontrés en tant que bibliothécaire lors de la réalisation des revues systématiques et de la portée, ainsi que des questions qui se posent lorsque vous donnez des instructions aux chercheurs sur ces revues. Il contient également quelques questions démographiques. Il faut environ 15 minutes pour répondre à ce sondage. Nous vous demandons de répondre à ce sondage en ligne en utilisant le lien suivant <https://www.surveymonkey.ca/r/LibsFrench> avant le **[insérer la date d'achèvement]**. En sélectionnant "J'accepte" sur la plate-forme d'enquête, vous consentez à participer à la première phase de cette étude.

Il y a peu de risques associés à votre participation à la première phase de l'étude. Certains éléments et questions de ce sondage peuvent vous mettre mal à l'aise, car ils vous demandent de préciser vos perceptions et vos expériences des défis et des obstacles que vous avez rencontrés en tant que bibliothécaires lors de la réalisation des revues systématiques et de la portée, ainsi que des problèmes qui surviennent lorsque vous instruisez les chercheurs sur ces revues. Vous n'avez pas à répondre à des éléments ou à des questions qui vous mettent mal à l'aise.

Vous pouvez ou non bénéficier directement de la première phase de l'étude. L'étude permettra de vous sensibiliser et de réfléchir aux défis et aux obstacles que vous avez rencontrés lorsque vous avez terminé ou collaboré à des revues systématiques et de la portée en tant que bibliothécaire. L'étude permettra également d'améliorer les méthodologies des revues systématiques et de la portée en s'appuyant sur le peu de recherches empiriques sur les défis et les obstacles rencontrés par les chercheurs et/ou les bibliothécaires lors de la réalisation des revues systématiques et de la portée, afin qu'ils (elles) puissent prendre des décisions informées sur les méthodes et les considérations requises lors de la réalisation de ces types de revues. Pour vous remercier de votre participation à l'étude, vous recevrez un sommaire des résultats et si vous souhaitez participer à un tirage au sort à la fin de l'enquête, vous aurez la possibilité d'inscrire votre nom à un tirage pour gagner l'une des quatre cartes-cadeaux Starbucks d'une valeur de 25 \$. Le tirage est ouvert à tous les participant(e)s à la recherche qui s'inscrivent au tirage, qu'ils décident ou non de se retirer de leur participation au projet de recherche.

Une fois l'étude terminée, un nom sera choisi au hasard parmi ceux (celles) qui se sont inscrit(e)s et la personne dont le nom est tiré sera informée par courriel. Pour gagner le prix, la personne doit répondre correctement à une question d'aptitude. Si la personne ne peut être jointe dans les 14 jours suivants, la date du tirage, le prix sera attribué au deuxième nom choisi au hasard et ainsi de suite jusqu'à ce que le prix ait été attribué. Les chances de gagner un prix dépendront du nombre d'inscriptions admissibles récupérées. Le prix doit être accepté tel quel ou perdu et ne peut être échangé contre de l'argent.

Votre nom et l'adresse courriel que vous fournissez lorsque vous participez au tirage sont collectés afin de vous contacter si votre nom est sélectionné lors du tirage. Votre nom et les informations de contact que vous avez fournies seront gardés confidentiels et ensuite détruits une fois les prix attribués.

Nous nous réservons le droit d'annuler le tirage ou d'annuler l'attribution du prix si l'intégrité du tirage ou de la recherche ou la confidentialité des participants est compromise. Le tirage est régi par les lois applicables du Canada.

Le sondage est conçu de manière à ce que votre identité reste strictement confidentielle et anonyme. Vos réponses à ce sondage ne seront utilisées que pour décrire les défis et les obstacles rencontrés par les chercheurs en début de carrière lors de la conduite des revues systématiques et/ou de la portée.

Si vous souhaitez participer à la deuxième phase de ce projet, le sondage vous demandera de fournir votre nom et votre adresse électronique. Ces informations ne seront pas combinées avec vos réponses à ce sondage. Elles ne seront utilisées qu'à des fins de recrutement si vous souhaitez participer à la deuxième phase. Vos réponses à ce sondage seront combinées avec d'autres réponses de sorte que vous ne pourrez pas être identifié dans les rapports ou présentations publiés. En outre, toute réponse écrite qui pourrait révéler votre identité (par exemple, votre nom, votre ville ou votre région) sera masquée dans le sondage et ne sera pas incluse dans la base de données.

Les sondages complétés seront enregistrés sur un ordinateur protégé par un mot de passe dans un bureau de recherche de l'Université d'Ottawa. Seuls les membres de l'équipe de recherche susmentionnée auront accès aux sondages. Les données seront conservées pendant cinq ans après la publication des résultats de la recherche. Après cette période, les données seront déchiquetées et éliminées de manière appropriée.

La participation à cette étude est volontaire. Une fois le sondage soumis, les participants ne pourront plus retirer leurs données de l'étude, car les chercheurs ne pourront plus retracer les ensembles de données individuels.

Si vous avez des questions concernant l'étude, veuillez contacter Lindsey Sikora ou Katherine Moreau, aux coordonnées ci-dessous. Si vous avez des questions concernant la conduite éthique de cette étude, vous pouvez contacter le responsable du protocole pour l'éthique dans la recherche, Université d'Ottawa à l'adresse suivante :

Salle Tabaret
 550, rue Cumberland, salle 156
 Ottawa, Ontario K1N 6N5
 (613) 562-5382
 ethics@uottawa.ca

Cordialement,

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Letters of Information for Librarians – Reminder Email - (Phase 1 – Survey)



Université d'Ottawa / University of Ottawa

2nd Emailing – Reminder

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Hello,

Recently, you were invited to take part in a study conducted by Lindsey Sikora, PhD candidate from the University of Ottawa under the supervision of Professor Katherine Moreau.

The purpose of the study is to better understand the perceived challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, this survey will help determine how librarians can better support ECRs when conducting SRs and ScRs.

If you have completed the survey – THANK YOU!

The completion of the linked survey is **voluntary** but each response is valuable to us. If you have not yet completed the survey, we would appreciate if you would consider taking approximately 15-20 minutes to do so using the following link: <https://www.surveymonkey.ca/r/LibsEnglish>. Please remember that your identity and responses will be kept confidential.

Sincerely,

Research Team:	<p>Lindsey Sikora, PhD (candidate) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5</p>	<p>Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)</p>
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Appendix T Librarians' reminder survey email in French

**Lettre d'information pour les bibliothécaires —
Courriel de rappel — (Phase 1 — Sondage)**

**Université d'Ottawa/University of Ottawa
2e envoi par courriel — Rappel**

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Bonjour,

Récemment, vous avez été invité à participer à une étude menée par Lindsey Sikora, doctorante de l'Université d'Ottawa, sous la supervision de la professeur Katherine Moreau.

L'objectif de cette étude est de mieux comprendre les défis et les obstacles perçus auxquels sont confrontés les chercheurs en début de carrière et les bibliothécaires lorsqu'ils (elles) effectuent des revues systématiques et des revues de la portée en sciences de la santé et en médecine. Cette phase de la recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et des bibliothécaires lors de la réalisation de ces revues. De plus, cette étude permettra de déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils (elles) effectuent des revues systématiques et des revues de la portée.

Si vous avez répondu à l'enquête — MERCI !

La participation à ce sondage est volontaire, mais nous sommes reconnaissants de chaque réponse. Si vous n'avez pas encore répondu à ce sondage, nous vous serions reconnaissants de bien vouloir prendre environ 15 minutes pour le faire en utilisant le lien suivant **[insérer le lien]**. N'oubliez pas que votre identité et vos réponses resteront confidentielles.

Cordialement,

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Appendix U Librarians' interview guide in English

Interview Guide

DATE: _____

TIME: _____

PARTICIPANT ID: _____

INTERVIEWER: _____

Research Question 1: What are the barriers and challenges librarians in health professions face when conducting SRs and ScRs?

Research Question 2: What are the barriers and challenges librarians in health professions face when instructing how to conduct SRs and ScRs?

Research Question 3: What are potential facilitators and solutions to overcoming the barriers and challenges librarians in health professions face when conducting SRs or ScRs?

Research Question 4: According to librarians, how can librarians better support ECRs when conducting SRs and ScRs?

End

Is there anything that you would like to add to the interview about this topic?

Guide d'entretien

Question de recherche : Quels sont les obstacles et les défis auxquels sont confrontés les bibliothécaires des professions de santé lorsqu'ils réalisent des revues systématiques et des revues de portée ?

- 1) Quels sont les obstacles ou les défis méthodologiques que vous avez rencontrés en tant que bibliothécaire effectuant des revues systématiques ou des revues de portée ?
 - a. Avez-vous trouvé les méthodes plus faciles ou plus difficiles pour réaliser une revue systématique ou une revue de la portée, ou les deux étaient-elles équivalentes dans leurs défis ? Racontez-moi votre expérience.
- 2) Quels sont les obstacles ou les défis interpersonnels auxquels vous avez été confronté en tant que bibliothécaire effectuant des revues systématiques ou des revues de la portée ?

Question de recherche : Quels sont les facilitateurs et les solutions possibles pour surmonter les obstacles et les défis auxquels les bibliothécaires des professions de santé sont confrontés lorsqu'ils effectuent des revues systématiques et des revues de la portée ?

- 1) Comment avez-vous surmonté ces obstacles ou défis méthodologiques ?
 - a. Avez-vous utilisé une ou plusieurs stratégies particulières ?
- 2) Comment avez-vous surmonté ces obstacles ou défis interpersonnels ?
 - a. Avez-vous utilisé une ou plusieurs stratégies particulières ?
- 3) Comment avez-vous surmonté les défis pédagogiques rencontrés lors de l'enseignement des revues systématiques et des revues de portée ?
 - a. Avez-vous utilisé une ou plusieurs stratégies particulières ?

Question de recherche : Comment les bibliothécaires peuvent-ils mieux soutenir les chercheurs en début de carrière lorsqu'ils effectuent des revues systématiques et des revues de la portée ?

Fin

1. Y a-t-il quelque chose que vous aimeriez ajouter à la conversation sur ce sujet ?

Appendix W Librarians' letter of information for interviews in English

Letter of Information for Librarians (Phase 2 - Interviews)



Université d'Ottawa / University of Ottawa

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5 (613) 562-5800 (ext. 8959)	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Dear [insert name of librarian],

You are invited to participate in a one-on-one interview for Phase 2 of the above-mentioned study.

The purpose of the study is to better understand the challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, this survey will help determine how librarians can better support ECRs when conducting SRs and ScRs.

If you agree to participate in this phase of the study, you will be asked to take part in one one-on-one interview. We are aiming to interview 10-15 librarians. The interview may take place by Zoom at a time that is convenient for you. We will ask that you select a location for the interview that is private and convenient for you. Lindsey Sikora will then conduct the interview with you by Zoom from a private office. The interview will be a semi-structured conversation-style session. In the interview, you will be asked a few open-ended questions, encouraging you to comment on your experience surrounding the challenges and barriers, but also the facilitators around collaborating or conducting SRs and ScRs as a librarian, as well as issues (as well as facilitators) that arise when you instruct researchers about these reviews. This can include reflections on methods, processes, expectations, and results or anything you deem relevant. The interview will take approximately **60 minutes** to complete. With your consent, the interview will be audio-recorded and transcribed by Lindsey Sikora or a professional transcriptionist for

analysis. You will not be asked your name during the interview process, to protect your anonymity. Lindsey Sikora will terminate recruitment once 15 interviews are achieved. The interviewees will be selected on a first-come, first-serve basis. Lindsey Sikora will send an email reply to any individuals not included in Phase 2 to explain that the project has reached its capacity for participants and thank them for volunteering.

There is little risk associated with your involvement in this study. Some of the questions in the interview may make you feel uncomfortable because they ask about your experiences and surrounding the challenges and barriers, but also the facilitators around collaborating or conducting SRs and ScRs as a librarian, as well as issues that arise when you instruct researchers about these reviews. You do not have to respond to any questions that make you feel uncomfortable. You may refuse to participate in the study. Your responses, recordings and transcripts will remain confidential.

You may or may not benefit directly from Phase 2 of the study. The study will generate awareness and reflection about the challenges and barriers you have encountered when completing SRs and ScRs as a librarian, as well as your instructional experience with these reviews. The study will also potentially improve SRs and ScRs methodologies by building on the very limited body of empirical research on challenges and barriers experienced by librarians when collaborating or conducting SRs and ScRs, as well as when they instruct researchers about these reviews, allowing them to make informed decisions about the methods and considerations required when completing these reviews. To thank you for your participation in the study, you will receive a summary of the findings and if you'd like to enter an email at the end of the interview, you will be given the option to enter your name in a draw to win one of four Starbucks gift cards valued at \$25. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries retrieved. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name and email address that you provide when you enter the draw is collected for the purposes of contacting you if your name is selected in the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prizes have been awarded.

We reserve the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

The information that you share in the interview will remain strictly confidential. The information you provide in the interview will only be used for describing the challenges and barriers encountered by librarians when collaborating or conducting SRs and/or ScRs, as well as issues that arise when you instruct researchers about these reviews. Because the interview will be conducted by Zoom with Lindsey Sikora, your anonymity cannot be fully protected. Only Lindsey Sikora and her supervisor will know your identity, and you will not be asked to state your name in the interview. Any information that could potentially reveal your identity (e.g., name, specific position in the organization, years of experience) will be erased from the audio recording and transcript so that you cannot be identified in published reports or presentations. We will email you a copy of your interview transcript to review and revise prior to analyses. We will password-protect the transcript and will contact you directly to provide you with the password.

The digital audio recording of the interview will be downloaded and erased from the audio-recorder immediately after the interview. All data will be stored in a locked research office at the University of Ottawa. All audio recordings will be stored on a password-protected computer in the same office. Only the members of the above-mentioned research team will have access to the data. Data will be conserved for five years after the publication of research findings. After this time, data will be shredded and appropriately discarded.

Your participation in the study and interview is **voluntary**. You can withdraw from the study at any time and/or refuse to answer any questions without any negative consequences. If you choose to withdraw, all data gathered until the time of withdrawal will be deleted, destroyed, and not included in any publications or presentations.

If you are interested in participating in a one-on-one interview for this study please contact Lindsey Sikora by [insert date] to obtain additional information about the interview. As mentioned, the interview will be scheduled at a time that is convenient for you. Your written consent will be obtained prior to the interview. We will email you a copy of the consent form to review, sign, and return to Lindsey Sikora prior to the interview. We will password-protect the consent form and contact you directly to provide you with the password. If you choose to conduct the interview by Zoom you can print and sign the consent form and then send a password-protected electronic copy of the completed consent form to Lindsey Sikora by email or you can mail her a signed copy of it.

If you have any questions about the study, please contact Lindsey Sikora or Katherine Moreau at the coordinates below. If you have any questions regarding the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa at:

Tabaret Hall
550 Cumberland Street, Room 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Sincerely,

<hr/> <p>Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5 (613) 562-5800 (ext. 8959)</p>	<hr/> <p>Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)</p>
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Appendix X Librarians' letter of information for interviews in French

Lettres d'information pour les bibliothécaires (Phase 2 - Entretiens)

Université d'Ottawa / University of Ottawa

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Cher [insérer le nom du bibliothécaire],

Vous êtes invité(e) à participer à un entretien individuel pour la phase 2 de l'étude susmentionnée.

L'objectif de l'étude est de mieux comprendre les défis et les obstacles auxquels sont confrontés les chercheurs en début de carrière et les bibliothécaires lorsqu'ils effectuent des revues systématiques et des revues de portée dans le domaine des sciences de la santé et de la médecine. Cette phase de la recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et des bibliothécaires lorsqu'ils effectuent ces méthodologies de revue. De plus, cette enquête permettra de déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils effectuent des revues systématiques et des revues de portée.

Si vous acceptez de participer à cette phase de l'étude, il vous sera demandé de prendre part à un entretien individuel. Nous souhaitons interroger 10 à 15 bibliothécaires. L'entretien peut avoir lieu par Zoom à un moment qui vous convient. Nous vous demanderons de choisir un lieu privé et pratique pour l'entretien. Lindsey Sikora mènera alors l'entretien avec vous par Zoom depuis un bureau privé. L'entretien sera une session semi-structurée de type conversation. Au cours de l'entretien, on vous posera quelques questions ouvertes, en vous encourageant à commenter votre expérience concernant les défis et les obstacles, mais aussi les facteurs qui facilitent la collaboration ou la réalisation des revues systématiques et des revues de portée en tant que bibliothécaire, ainsi que les problèmes (et les facteurs qui facilitent) qui surviennent lorsque vous donnez des instructions aux chercheurs sur ces revues. Cela peut inclure des réflexions sur les méthodes, les processus, les attentes et les résultats ou tout ce que vous jugez pertinent. L'entretien durera environ 60 minutes. Avec votre consentement, l'entretien sera enregistré et transcrit par Lindsey Sikora ou un transcripteur professionnel pour analyse. Votre nom ne vous sera pas demandé au cours de l'entretien, afin de protéger votre anonymat. Lindsey Sikora mettra fin au recrutement lorsque 15 entretiens auront été réalisés. Les personnes interrogées seront sélectionnées selon le principe du "premier arrivé, premier servi". Lindsey Sikora enverra un courriel à toutes les personnes non incluses dans la

phase 2 pour leur expliquer que le projet a atteint sa capacité de participants et les remercier de s'être portés volontaires.

Il y a peu de risques associés à votre participation à cette étude. Certaines des questions de l'entretien peuvent vous mettre mal à l'aise parce qu'elles portent sur vos expériences et sur les défis et les obstacles, mais aussi sur les facteurs qui facilitent la collaboration ou la réalisation de revues systématiques et des revues de portée en tant que bibliothécaire, ainsi que sur les problèmes qui se posent lorsque vous donnez des instructions aux chercheurs sur ces revues. Vous n'êtes pas obligé de répondre aux questions qui vous mettent mal à l'aise. Vous pouvez refuser de participer à l'étude. Vos réponses, enregistrements et transcriptions resteront confidentiels.

Vous pouvez ou non bénéficier directement de la phase 2 de l'étude. L'étude suscitera une prise de conscience et une réflexion sur les défis et les obstacles que vous avez rencontrés lors de la réalisation des revues systématiques et des revues de portée en tant que bibliothécaire, ainsi que sur votre expérience pédagogique de ces revues. L'étude permettra également d'améliorer potentiellement les méthodologies des revues systématiques et des revues de portée en s'appuyant sur le corpus très limité de recherches empiriques sur les défis et les obstacles rencontrés par les bibliothécaires lorsqu'ils collaborent ou réalisent des revues systématiques et des revues de portée, ainsi que lorsqu'ils instruisent les chercheurs sur ces examens, leur permettant ainsi de prendre des décisions éclairées sur les méthodes et les considérations requises pour réaliser ces revues. Pour vous remercier de votre participation à l'étude, vous recevrez un résumé des résultats et, si vous le souhaitez, à la fin de l'entretien, vous aurez la possibilité d'inscrire votre nom dans un tirage au sort pour gagner l'une des quatre cartes-cadeaux Starbucks d'une valeur de 25 dollars. Le tirage au sort est ouvert à tous les participants à la recherche qui inscrivent leur nom au tirage au sort, qu'ils décident ou non de ne plus participer au projet de recherche.

À la fin de l'étude, un nom sera tiré au sort parmi les personnes ayant participé et la personne dont le nom est tiré au sort sera informée par e-mail. Pour gagner le prix, la personne devra répondre correctement à une question réglementaire. Si la personne ne peut être jointe dans les 14 jours suivant la date du tirage au sort, le prix sera attribué au deuxième nom sélectionné au hasard et ainsi de suite jusqu'à ce que le prix soit attribué. Les chances de gagner un prix dépendront du nombre de participations admissibles récupérées. Le prix doit être accepté tel qu'il a été attribué ou perdu et ne peut être échangé contre de l'argent.

Votre nom et votre adresse électronique que vous fournissez lorsque vous participez au tirage au sort sont recueillis dans le but de vous contacter si votre nom est sélectionné dans le tirage au sort. Votre nom et les informations de contact que vous avez fournies resteront confidentiels et seront détruits une fois les prix attribués.

Nous nous réservons le droit d'annuler le tirage au sort ou d'annuler l'attribution du prix si l'intégrité du tirage au sort ou de la recherche ou la confidentialité des participants est compromise. Le tirage est régi par les lois applicables du Canada.

Les informations que vous partagez lors de l'entretien resteront strictement confidentielles. Les informations que vous fournirez lors de l'entrevue ne serviront qu'à décrire les défis et les obstacles rencontrés par les bibliothécaires lorsqu'ils collaborent ou effectuent des revues systématiques et des revues de portée, ainsi que les questions qui se posent lorsque vous instruisez les chercheurs au sujet de ces revues. Étant donné que l'entretien sera mené par Zoom avec Lindsey Sikora, votre anonymat ne peut être entièrement protégé. Seuls Lindsey Sikora et son superviseur connaîtront votre identité, et il ne vous sera pas demandé de décliner votre nom au cours de l'entretien. Toute information susceptible de révéler votre identité (par exemple, votre nom, votre poste spécifique dans l'organisation, vos années

d'expérience) sera effacée de l'enregistrement audio et de la transcription afin que vous ne puissiez pas être identifié dans les rapports ou présentations publiés. Nous vous enverrons par courriel une copie de la transcription de votre entretien afin que vous puissiez la lire et la réviser avant les analyses. La transcription sera protégée par un mot de passe et nous vous contacterons directement pour vous fournir le mot de passe.

L'enregistrement audio numérique de l'entretien sera téléchargé et effacé de l'enregistreur audio immédiatement après l'entretien. Toutes les données seront conservées dans un bureau de recherche fermé à clé à l'Université d'Ottawa. Tous les enregistrements audio seront stockés sur un ordinateur protégé par un mot de passe dans le même bureau. Seuls les membres de l'équipe de recherche susmentionnée auront accès aux données. Les données seront conservées pendant cinq ans après la publication des résultats de la recherche. Après cette période, les données seront déchetées et éliminées de manière appropriée.

Votre participation à l'étude et à l'entretien est volontaire. Vous pouvez vous retirer de l'étude à tout moment et/ou refuser de répondre à toute question sans aucune conséquence négative. Si vous choisissez de vous retirer, toutes les données recueillies jusqu'au moment du retrait seront supprimées, détruites et ne figureront dans aucune publication ou présentation.

Si vous souhaitez participer à un entretien individuel dans le cadre de cette étude, veuillez contacter Lindsey Sikora avant le [insérer la date] pour obtenir des informations supplémentaires sur l'entretien. Comme indiqué, l'entretien aura lieu à un moment qui vous convient. Votre consentement écrit sera obtenu avant l'entretien. Nous vous enverrons par courrier électronique une copie du formulaire de consentement à lire, à signer et à renvoyer à Lindsey Sikora avant l'entretien. Le formulaire de consentement sera protégé par un mot de passe et nous vous contacterons directement pour vous fournir le mot de passe. Si vous choisissez de mener l'entretien par Zoom, vous pouvez imprimer et signer le formulaire de consentement, puis envoyer une copie électronique protégée par un mot de passe du formulaire de consentement rempli à Lindsey Sikora par courrier électronique ou lui envoyer une copie signée par courrier.

Si vous avez des questions concernant l'étude, veuillez contacter Lindsey Sikora ou Katherine Moreau, aux coordonnées ci-dessous. Si vous avez des questions concernant la conduite éthique de cette étude, vous pouvez contacter le responsable du protocole pour l'éthique dans la recherche, Université d'Ottawa à l'adresse suivante :

Salle Tabaret
550, rue Cumberland, salle 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Cordialement,

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Consent Form for Librarians



Université d'Ottawa / University of Ottawa

Barriers and facilitators facing early career researchers in medicine and health sciences when conducting systematic and scoping reviews: A mixed methods study

Research Team:	Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5 (613) 562-5800 (ext. 8959)	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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Invitation to Participate: I am invited to participate in a one-on-one interview for the above-mentioned research study conducted by Lindsey Sikora, PhD (Education) candidate from the University of Ottawa under the supervision of Professor Katherine Moreau. The Social Sciences and Humanities Research Ethics Board at the University of Ottawa has approved the ethical components of this project.

Purpose of the Study:

The purpose of the study is to better understand the challenges and barriers faced by early career researchers (ECRs) and librarians when conducting systematic reviews (SRs) and scoping reviews (ScRs) in health sciences and medicine. This phase of research will explore ECRs' and librarians' opinions, attitudes and perceptions experienced when performing these review methodologies. As well, these interviews will help determine how librarians can better support ECRs when conducting SRs and ScRs.

Participation: My participation will consist of taking part in one one-on-one interview. The interview may take place by Zoom at a time that is convenient for me. Lindsey Sikora will then conduct the interview with me from a private office. The interview will be a semi-structured, conversation-style session. In the interview, I will be asked a few open-ended questions, encouraging me to comment on my experience surrounding the challenges and barriers, but also the facilitators around collaborating or conducting SRs and ScRs as a librarian, as well as issues that arise when you instruct researchers about these reviews. This can include reflections on methods, processes, expectations, and results or anything I deem relevant. The interview will take approximately **60 minutes** to complete. With my consent, the interview will be audio-recorded and transcribed by Lindsey Sikora or a professional transcriptionist for analysis. I understand that I will not be asked my name during the interview process, to protect my anonymity.

Risks: There is little risk associated with my involvement in this study. Some of the questions in the interview may make me feel uncomfortable because they ask about my experiences and perceptions surrounding the challenges and barriers, but also the facilitators around collaborating or conducting SRs

and ScRs as a librarian, as well as issues that arise when you instruct researchers about these reviews. . I do not have to respond to any questions that make me feel uncomfortable. I may refuse to participate in the study. My responses, recoding and transcripts will remain confidential.

Benefits: I may or may not benefit directly from this study. The study will generate awareness and reflection about the challenges and barriers you have encountered when completing SRs and ScRs as a librarian. The study will also potentially improve SRs and ScRs methodologies by building on the very limited body of empirical research on challenges and barriers experienced by librarians when conducting SRs and ScRs, so that they can make informed decisions about the methods and considerations required when completing these types of reviews.

Compensation: To thank me for my participation in the study, I will receive a summary of the findings and if I'd like to enter an email at the end of the interview, I will be given the option to enter my name in a draw to win one of four Starbucks gift cards valued at \$25. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries retrieved. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

We reserve the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

Confidentiality and anonymity: I have received assurance from the researchers that the information I will share will remain strictly confidential. I understand that the information I provide in the interview will only be used for describing the challenges and barriers encountered by librarians when conducting SRs and/or ScRs. Because the interview will be conducted by Zoom by Lindsey Sikora from the University of Ottawa, my anonymity cannot be fully protected. Only Lindsey Sikora and her supervisor will know my identity, and I will not be asked to state my name in the interview. Any information that could potentially reveal my identity (e.g., name, specific position in the organization, years of experience) will be eliminated from the audio recording and transcript so that I cannot be identified in published reports or presentations. Lindsey Sikora will email me a copy of my interview transcript to review and revise prior to analyses. Lindsey Sikora will password-protect the transcript and will contact me directly to provide me with the password.

My name and email address that I provide when I enter the draw is collected for the purposes of contacting me if my name is selected in the draw. My name and the contact information I have provided will be kept confidential and then destroyed once the prizes have been awarded.

Conservation of data: The digital audio recording of the interview will be downloaded and erased from the audio-recorder immediately after the interview. All data will be stored in a locked research office at the University of Ottawa. All audio recordings will be stored on a password-protected computer. Only the members of the above-mentioned research team will have access to the data. Data will be conserved for five years after the publication of research findings. After this time, data will be shredded and appropriately discarded.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be deleted, destroyed, and not included in any publications or presentations.

Acceptance: I _____, agree to participate in the above-mentioned research study conducted by Lindsey Sikora PhD (Education) candidate from the Faculty of Education, University of Ottawa under the supervision of Professor Katherine Moreau.

If I have any questions about the study, I may contact Lindsey Sikora or Katherine Moreau at:

Lindsey Sikora, PhD (candidate) Health Sciences Library, Room 1020G University of Ottawa 451 Smyth Road Ottawa, Ontario K1H 8M5 (613) 562-5800 (ext. 8959)	Katherine Moreau, PhD (Supervisor) Faculty of Education University of Ottawa Vanier Hall 5083 136, Jean-Jacques-Lussier Private Ottawa, Ontario K1N 6N5 (613) 562-5800 (ext. 2808)
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If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa at:

Tabaret Hall
550 Cumberland Street, Room 156
Ottawa, Ontario K1N 6N5
(613) 562-5382
ethics@uottawa.ca

There are two copies of the consent form, one of which is mine to keep.

Participant's signature:

Date:

Researcher's signature:

Date:

Appendix Z Librarians' consent form in French

Formulaire de consentement pour les bibliothécaires

Université d'Ottawa / University of Ottawa

Obstacles et opportunités/occasions auxquels font face les chercheurs en début de carrière en médecine et en sciences de la santé lorsqu'ils (elles) réalisent des revues systématiques et de la portée : Une étude de méthodes variées

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Invitation à participer : Je suis invité(e) à participer à une entrevue individuelle dans le cadre de l'étude de recherche susmentionnée menée par Lindsey Sikora, candidate au doctorat (éducation) de l'Université d'Ottawa sous la supervision de la professeure Katherine Moreau. Le Comité d'éthique de la recherche en sciences humaines de l'Université d'Ottawa a approuvé les composantes éthiques de ce projet.

Objectif de l'étude : Le but de l'étude est de mieux comprendre les défis et les obstacles auxquels font face les chercheurs en début de carrière et les bibliothécaires lorsqu'ils effectuent des revues systématiques et des revues de la portée en sciences de la santé et en médecine. Cette phase de la recherche explorera les opinions, les attitudes et les perceptions des chercheurs en début de carrière et des bibliothécaires lorsqu'ils effectuent ces méthodologies de revue. De plus, ces entrevues aideront à déterminer comment les bibliothécaires peuvent mieux soutenir les chercheurs en début de carrière lorsqu'ils effectuent des revues systématiques et des revues de portée.

Participation : Ma participation consistera à prendre part à un entretien individuel. L'entretien peut avoir lieu par Zoom à un moment qui me convient. Lindsey Sikora mènera alors l'entretien avec moi dans un bureau privé. L'entretien sera une session semi-structurée, de type conversation. Au cours de l'entrevue, on me posera quelques questions ouvertes, m'encourageant à commenter mon expérience entourant les défis et les obstacles, mais aussi les facilitateurs entourant la collaboration ou la réalisation de revues systématiques et des revues de portée en tant que bibliothécaire, ainsi que les problèmes qui surviennent lorsque vous instruisez les chercheurs au sujet de ces revues. Cela peut inclure des réflexions sur les méthodes, les processus, les attentes et les résultats ou tout ce que je juge pertinent. L'entretien durera environ 60 minutes. Avec mon consentement, l'entretien sera enregistré et transcrit par Lindsey Sikora ou un transcripteur professionnel pour analyse. Je comprends que l'on ne me demandera pas mon nom au cours de l'entretien, afin de protéger mon anonymat.

Risques : Il y a peu de risques associés à ma participation à cette étude. Certaines questions de l'entrevue peuvent me mettre mal à l'aise parce qu'elles portent sur mes expériences et mes perceptions des défis et des obstacles, mais aussi des facteurs qui facilitent la collaboration ou la réalisation de revues

systematiques et des revues de portée en tant que bibliothécaire, ainsi que des problèmes qui surviennent lorsque vous donnez des instructions aux chercheurs au sujet de ces évaluations. Je ne suis pas obligé de répondre aux questions qui me mettent mal à l'aise. Je peux refuser de participer à l'étude. Mes réponses, le recodage et les transcriptions resteront confidentiels.

Avantages : Je peux ou non bénéficier directement de cette étude. L'étude suscitera une prise de conscience et une réflexion sur les défis et les obstacles que vous avez rencontrés lors de la réalisation des revues systématiques et des revues de portée en tant que bibliothécaire. L'étude permettra également d'améliorer les méthodologies des revues systématiques et des revues de portée en s'appuyant sur le corpus très limité de recherches empiriques sur les défis et les obstacles rencontrés par les bibliothécaires lors de la réalisation de revues systématiques et des revues de portée, afin qu'ils puissent prendre des décisions éclairées sur les méthodes et les considérations requises lors de la réalisation de ces types d'examen.

Rémunération : Pour me remercier de ma participation à l'étude, je recevrai un résumé des conclusions et, si je le souhaite, à la fin de l'entretien, j'aurai la possibilité d'inscrire mon nom dans un tirage au sort pour gagner une des quatre cartes-cadeaux Starbucks d'une valeur de 25 \$. Le tirage au sort est ouvert à tous les participants à la recherche qui inscrivent leur nom au tirage au sort, qu'ils décident ou non de ne plus participer au projet de recherche.

À la fin de l'étude, un nom sera tiré au sort parmi les participants et la personne dont le nom est tiré au sort sera informée par courrier électronique. Pour gagner le prix, la personne devra répondre correctement à une question réglementaire. Si la personne ne peut être jointe dans les 14 jours suivant la date du tirage au sort, le prix sera attribué au deuxième nom sélectionné au hasard et ainsi de suite jusqu'à ce que le prix soit attribué. Les chances de gagner un prix dépendront du nombre de participations admissibles récupérées. Le prix doit être accepté tel qu'il a été attribué ou perdu et ne peut être échangé contre de l'argent.

Nous nous réservons le droit d'annuler le tirage au sort ou d'annuler l'attribution du prix si l'intégrité du tirage au sort ou de la recherche ou la confidentialité des participants est compromise. Le tirage est régi par les lois applicables du Canada.

Confidentialité et anonymat : J'ai reçu l'assurance des chercheurs que les informations que je vais partager resteront strictement confidentielles. Je comprends que les informations que je fournirai lors de l'entrevue ne seront utilisées que pour décrire les défis et les obstacles rencontrés par les bibliothécaires lors de la réalisation des revues systématiques et des revues de portée. Étant donné que l'entrevue sera menée par Zoom par Lindsey Sikora de l'Université d'Ottawa, mon anonymat ne peut être entièrement protégé. Seule Lindsey Sikora et son superviseur connaîtront mon identité, et on ne me demandera pas de décliner mon nom au cours de l'entrevue. Toute information qui pourrait potentiellement révéler mon identité (par exemple, mon nom, le poste spécifique que j'occupe dans l'organisation, mes années d'expérience) sera éliminée de l'enregistrement audio et de la transcription afin que je ne puisse pas être identifié dans les rapports ou présentations publiés. Lindsey Sikora m'enverra par courriel une copie de la transcription de mon entretien afin que je puisse la projeter et la réviser avant les analyses. Lindsey Sikora protégera la transcription par un mot de passe et me contactera directement pour me fournir le mot de passe.

Mon nom et mon adresse électronique que je fournis lorsque je participe au tirage au sort sont recueillis dans le but de me contacter si mon nom est sélectionné dans le tirage au sort. Mon nom et les coordonnées que j'ai fournies seront gardés confidentiels, puis détruits une fois les prix attribués.

Conservation des données : L'enregistrement audio numérique de l'entretien sera téléchargé et effacé de l'audio-enregistreur immédiatement après l'entretien. Toutes les données seront conservées dans un bureau de recherche fermé à clé à l'Université d'Ottawa. Tous les enregistrements audio seront stockés sur un ordinateur protégé par un mot de passe. Seuls les membres de l'équipe de recherche susmentionnée auront accès aux données. Les données seront conservées pendant cinq ans après la publication des résultats de la recherche. Après cette période, les données seront déchiquetées et éliminées de manière appropriée.

Participation volontaire : Je n'ai aucune obligation de participer et si je choisis de participer, je peux me retirer de l'étude à tout moment et/ou refuser de répondre à toute question sans subir de conséquences négatives. Si je choisis de me retirer, toutes les données recueillies jusqu'au moment du retrait seront supprimées, détruites et ne seront pas incluses dans les publications ou les présentations.

Acceptation : Je, _____, accepte de participer à l'étude de recherche susmentionnée menée par Lindsey Sikora candidate au doctorat (éducation) de la Faculté d'éducation de l'Université d'Ottawa sous la supervision de la professeure Katherine Moreau.

Si j'ai des questions sur l'étude, je peux contacter Lindsey Sikora ou Katherine Moreau aux coordonnées suivantes :

Équipe de recherche:	Lindsey Sikora, candidate au doctorat Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5	Katherine Moreau, PhD (Superviseur) Faculté des sciences de l'éducation Université d'Ottawa Salle Vanier 5083 136, Jean-Jacques-Lussier Soldat Ottawa, Ontario K1N 6N5 (613) 562-5800 (poste 2808)
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Si j'ai des questions concernant la conduite éthique de cette étude, je peux contacter le responsable du protocole pour l'éthique de la recherche, Université d'Ottawa, à l'adresse suivante :

Pavillon Tabaret
550, rue Cumberland, pièce 156
Ottawa (Ontario) K1N 6N5
(613) 562-5382
ethics@uottawa.ca

Il y a deux copies du formulaire de consentement, dont l'une est à conserver.

Signature du participant :
Signature du chercheur :

Date :
Date :