## PEER REVIEW HISTORY

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## ARTICLE DETAILS

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| **TITLE (PROVISIONAL)** | Nursing contributions to virtual models of care in primary care: A scoping review protocol |
| **AUTHORS** | Vaughan, Crystal; Lukewich, Julia; Mathews, Maria; Hedden, Lindsay; Poitras, Marie-Eve; Asghari, Shabnam; Swab, Michelle; Ryan, Dana |

## VERSION 1 – REVIEW

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| **REVIEWER** | Pathman, Donald<br>University of North Carolina at Chapel Hill School of Medicine, Cecil G. Sheps Center for Health Services Research |
| **REVIEW RETURNED** | 07-Jul-2022 |

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| **GENERAL COMMENTS** | The topic of study—the growth of telehealth in primary care—is certainly timely, and this field that has suddenly grown with the pandemic certainly needs good evidence. The role of nurses in telehealth is one key aspect of telehealth, so a scoping review of the evidence to date seems relevant. The review protocol is based on a specific scoping review methodology, that of the Joanna Biggs Institute.<br><br>I do wonder about the value to the published literature of publishing a protocol for a scoping review (on any topic). Yes, the protocol used in any type of literature review is important to the findings of that review, but the review's protocol/methods can be judged by readers and the field when the actual findings of the review are published. For clinical studies, there is clear value to publishing the protocol both to help hold researchers honest as they conduct their study (help holding them to the planned study approaches), and a clear value to other researchers who will want to repeat the study, with or without some changes in methods. But is it also important for researchers conducting a literature review to similarly be held to their proposed methods and is there a need to promote honesty in reporting? This need seems less to me. But I appreciate that the field of publishing study protocols is relative new and likely evolving.<br><br>I see that medical assistants are not included in this scoping review. MA's play a large and increasing role within primary care practices within the US and are actively involved in telehealth. I do not know if other countries also rely on MA's within primary care practices, or perhaps other similar disciplines.<br>I assume that MA's are not mentioned within this scoping review protocol because MA's do not fall within the nursing field. What will it mean to this scoping review of the published reports identified and conclusions drawn based on these reports if they exclude |



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| | studies evaluating the role of medical assistants to virtual care? Is there a benefit to including studies of MA's?<br><br>Page 3, line 16. The text states that primary care practices have relied on virtual care during the pandemic for "routine healthcare services." What is meant by "routine healthcare services?" What primary care services does this include and which services are not included? And please provide references for this notion of "routine healthcare services". This issue is important because during the pandemic primary care practices were pushed into virtual care without understanding or evidence to show which patient services and health issues can be appropriately handled by telehealth. Without experience in triaging patients' issues into virtual visits, many types of patient needs, both appropriate and inappropriate for telehealth, were scheduled as telehealth visits. Where do "routine healthcare services" fall into this?<br><br>Page 3, line 31. Please clarify what a "designation-specific title" is, or perhaps this statement is not needed.<br><br>Page 4, second paragraph. The proposed use/adaptation of the Nursing Role Effectiveness Model (NREM) seems like a good way to help organize the studies and information that will be found in this review and good way to understand study findings.<br><br>Figure 1. Some thoughts about the NREM model components. (a) should community characteristics be included under Structure, as I can imagine that the roles and effectiveness of nurses' and all clinicians' virtual care will differ for communities that are rich in health care and other resources vs. communities that have few local resources (in the latter, care is much more challenging, whether virtual or in-person). (b) The three headings under "Process" are not along one dimension. Why isn't "medical care-related role" entitled "Dependent role" (to be parallel with "independent role" and "Interdependent role"---this is labeled as such on page 6 lines 26-27), and then move expanded scope of nursing practice under "Independent role"? (c) all outcomes are listed under the heading "Nursing-sensitive patient outcomes"—why nursing sensitive? All of the outcomes listed (functional status, self-care, symptom control, patient satisfaction, cost) are all recognized outcomes for the entire healthcare system. Why label them as nursing-sensitive outcomes? What outcomes would not fall under nursing-sensitive outcomes?<br><br>Page 5, lines 3-8. The stated research objectives of this review are to: (a) describe the attributes of virtual models of care within primary care settings that involve nurses (structure); (b) outline the nursing roles that are carried out through virtual delivery (in comparison to in-person) within primary care settings (process); and (c) identify barriers/facilitators to the implementation of virtual models of care (that involve nurses) within primary care settings. Since the proposed model to organize the information found in studies includes Outcomes (see Figure 1), shouldn't the outcomes identified in the literature be included in the research objectives? Learning barriers and facilitators is only important to the extent that the literature supports positive outcomes of nurses' contributions to telehealth. Looking only how to build nurses' involvement in telehealth creates an impression of advocacy work, not research to improve patient outcomes. And relatedly, nowhere within this proposed scoping review proposal are the possible limits or |



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| | downsides of nurses' roles in telehealth mentioned, or the limits of telehealth generally.<br><br>Page 6. Section on Identifying relevant studies. This section is well written and these inclusion criteria seem appropriate. What is missing is the inclusion and exclusion criteria for the types of nursing roles and tasks within telehealth that will be included in the scoping review. Presumably independent provider roles, such as serving as the primary care provider addressing the patient's clinical needs during the telehealth including diagnoses and treatment will be included in the review. But what about a nursing assistant's and possibly LPN's role physically initiating the telehealth visit and then handing it over to the primary provider, or the nursing assistant's role calling the patient who failed to show up on a telehealth visit to offer assistance with the technology? What range of roles will be included in this review? |

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| **REVIEWER** | Currie, Jane<br>Queensland University of Technology, School of Nursing |
| **REVIEW RETURNED** | 02-Aug-2022 |

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| **GENERAL COMMENTS** | Thank you for your submission, I enjoyed reading it. The methods are clearly explained. Given this is an international review, the introduction and background are focused on Canada. It would perhaps be helpful to the reader if an international perspective were provided. |

## VERSION 1 – AUTHOR RESPONSE

**Reviewer #1:** The topic of study—the growth of telehealth in primary care—is certainly timely, and this field that has suddenly grown with the pandemic certainly needs good evidence. The role of nurses in telehealth is one key aspect of telehealth, so a scoping review of the evidence to date seems relevant. The review protocol is based on a specific scoping review methodology, that of the Joanna Biggs Institute.

1. I do wonder about the value to the published literature of publishing a protocol for a scoping review (on any topic). Yes, the protocol used in any type of literature review is important to the findings of that review, but the review's protocol/methods can be judged by readers and the field when the actual findings of the review are published. For clinical studies, there is clear value to publishing the protocol both to help hold researchers honest as they conduct their study (help holding them to the planned study approaches), and a clear value to other researchers who will want to repeat the study, with or without some changes in methods. But is it also important for researchers conducting a literature review to similarly be held to their proposed methods and is there a need to promote honesty in reporting? This need seems less to me. But I appreciate that the field of publishing study protocols is relative new and likely evolving.

   *We understand your concerns based on relative need for protocols of this nature, but as you said, this is becoming a common practice for systematic and scoping reviews (in particular). Similar to protocols that are completed for clinical studies, this process allows researchers to provide detailed methodology for their review process and strengthens the rigour of the*



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*review. As well, publishing a review protocol allows a detailed description of the research under study to be more widely disseminated to avoid duplication of a review on a given topic.*

2. I see that medical assistants are not included in this scoping review. MA's play a large and increasing role within primary care practices within the US and are actively involved in telehealth. I do not know if other countries also rely on MA's within primary care practices, or perhaps other similar disciplines.
I assume that MA's are not mentioned within this scoping review protocol because MA's do not fall within the nursing field. What will it mean to this scoping review of the published reports identified and conclusions drawn based on these reports if they exclude studies evaluating the role of medical assistants to virtual care? Is there a benefit to including studies of MA's?

*We appreciate your insights and queries regarding the exclusion of MAs in this scoping review. As this scoping review aims to synthesize foundational evidence in the field of virtual primary care nursing, we want to remain committed to studying the nursing profession as it is viewed globally. Although MAs have clinical roles that resemble nursing roles in American healthcare systems, MAs do not consistently have distinct roles in healthcare systems across countries (as nurses do). As well, MAs can vary in scope of practice and regulation as they can include many different professional designations across jurisdictions. We believe that the inclusion of MAs could be beneficial to researchers in the United States (or other countries with a similar role). This difference, among others, across countries supports the decision to exclude MAs. There may be the opportunity to conduct a similar review focused on MAs in the future that captures additional virtual care roles in which MAs have a significant role. We can identify this exclusion as a limitation in the review. This review will identify evidence with international significance for the nursing profession.*

3. Page 3, line 16. The text states that primary care practices have relied on virtual care during the pandemic for "routine healthcare services." What is meant by "routine healthcare services?" What primary care services does this include and which services are not included? And please provide references for this notion of "routine healthcare services". This issue is important because during the pandemic primary care practices were pushed into virtual care without understanding or evidence to show which patient services and health issues can be appropriately handled by telehealth. Without experience in triaging patients' issues into virtual visits, many types of patient needs, both appropriate and inappropriate for telehealth, were scheduled as telehealth visits. Where do "routine healthcare services" fall into this?

*Examples have been provided to further explain "routine healthcare services" on p.3 para 2 (with references): "Primary care practices have relied heavily on virtual care during the pandemic to maintain the delivery of routine healthcare services (e.g., chronic disease management, sexual healthcare, screening, patient education) while minimizing risks of infection to clinicians and patients." Furthermore, appropriateness, as it relates to virtual care, was introduced to identify that not all routine services can be adapted to virtual care delivery. Examples of routine healthcare services that require in-person visits are provided (p.3 para 2): "There were, however, routine services that may have required an in-person physical assessment (e.g., high-risk prenatal care, cervical screening interventions) and were encouraged to be assessed for appropriateness prior to using virtual care."*



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4. Page 3, line 31. Please clarify what a “designation-specific title” is, or perhaps this statement is not needed.

   *Further explanation was provided after this statement in parentheses: “designation-specific title, e.g., RN.” We believe it is important to note that for nurses who practice in rural/remote areas and may be referred to as “community health nurse” are also Registered Nurses (or other title based on the country) and therefore, they still hold an additional title specific to their designation. Other designations (e.g., Nurse Practitioner, Licensed Practical Nurse) are not provided as examples here as they would not carry this additional title in rural/remote settings. Their scope of practice is either advanced (Nurse Practitioner) or limited (Licensed Practical Nurse) and therefore, they would not fit within the role description of a community health nurse.*

5. Page 4, second paragraph. The proposed use/adaptation of the Nursing Role Effectiveness Model (NREM) seems like a good way to help organize the studies and information that will be found in this review and good way to understand study findings.

   Figure 1. Some thoughts about the NREM model components.

   a. Should community characteristics be included under Structure, as I can imagine that the roles and effectiveness of nurses’ and all clinicians’ virtual care will differ for communities that are rich in health care and other resources vs. communities that have few local resources (in the latter, care is much more challenging, whether virtual or in-person).

      *This additional descriptor was added in text as an example of the detail that will be extracted to describe the primary care context (p.9 para 1): “availability of community supports/resources.” As well, in the sample extraction table provided (p.9, Table 2), “community characteristics” was added under the “Primary care context” section (extracted as part of the Structure component).*

   b. The three headings under “Process” are not along one dimension. Why isn’t “medical care-related role” entitled “Dependent role” (to be parallel with “independent role” and “Interdependent role”---this is labeled as such on page 6 lines 26-27), and then move expanded scope of nursing practice under “Independent role”?

      *In the literature, these terms are used interchangeably in reference to the NREM. To clarify this discrepancy between the Nursing Role Effectiveness Model (NREM) figure and the terms used in text, a statement was added on p.4 para 2 (where the NREM was first introduced): “Dependent roles can also be referred to as medical care-related roles; the term “dependent” will be used to describe these roles throughout.” As well, a footnote was added to the figure legend (found on p.14, corresponds with figure in a separate file): “Medical care-related roles will be referred to as “dependent” roles throughout this study.”*

   c. All outcomes are listed under the heading “Nursing-sensitive patient outcomes”—why nursing sensitive? All of the outcomes listed (functional status, self-care, symptom control, patient satisfaction, cost) are all recognized outcomes for the entire healthcare system. Why label them as nursing-sensitive outcomes? What outcomes would not fall under nursing-sensitive outcomes?



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*Although all outcomes can be viewed as relevant to the entire healthcare system, this model is nursing-specific and therefore aims to view outcomes within a nursing context. Outcomes identified within the NREM as nursing-sensitive, were identified through a rigorous process, involving a literature review and key informant recommendations, during the model development. A sentence has been added (p.4 para 2) to define nursing-sensitive outcomes upon first introduction of the NREM: "Nursing-sensitive outcomes, which are highlighted in this model, refer to outcomes that result (based on evidence) from nursing interventions or action within their scope of practice."*

6. Page 5, lines 3-8. The stated research objectives of this review are to: (a) describe the attributes of virtual models of care within primary care settings that involve nurses (structure); (b) outline the nursing roles that are carried out through virtual delivery (in comparison to in-person) within primary care settings (process); and (c) identify barriers/facilitators to the implementation of virtual models of care (that involve nurses) within primary care settings.

    a. Since the proposed model to organize the information found in studies includes Outcomes (see Figure 1), shouldn't the outcomes identified in the literature be included in the research objectives? Learning barriers and facilitators is only important to the extent that the literature supports positive outcomes of nurses' contributions to telehealth. Looking only how to build nurses' involvement in telehealth creates an impression of advocacy work, not research to improve patient outcomes.

    *At the end of p.4 para 2 you will see these two sentences: "This review will not analyze patient outcomes specifically, rather the focus will be on the structure and process components of this model to extract data related to roles in the context of virtual primary care nursing. The contributions of structures and roles need to be clarified to understand how these elements influence patient outcomes to allow virtual nursing practice in primary care to be supported, integrated, and sustained." This provides some clarification as to why outcomes are not mentioned in the objectives for this review. As very little evidence has been synthesized in this field of study, the impact of the structure component (i.e., patient-, provider-, system-level factors) on nursing roles is being investigated as an initial step. As research emerges in this field, specifically focused on evaluation/effectiveness, there might be the opportunity to conduct a review focused on outcomes of nurses in virtual care in the future. Further, to clarify, we have removed "Key outcomes (if applicable)" from the Virtual care context in Table 2; and the statement on p.9 para 1: "We will extract findings related to virtual care effectiveness or patient outcomes if available (to guide future related work)." As well, when we extract barriers/facilitators we are looking at factors that might have influenced nurses' ability to carry out certain roles which are not always discussed within the context of outcomes.*

    b. And relatedly, nowhere within this proposed scoping review proposal are the possible limits or downsides of nurses' roles in telehealth mentioned, or the limits of telehealth generally.

    *The limitations of nurses in virtual care specifically have not been well explored up to this point. I have added a statement to identify the challenges that are associated with virtual care use generally. This was added after the benefits of virtual care were identified (p.3 para 1): "There are also challenges to consider when using virtual care,*



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*such as limited access to technology (e.g., telephone, internet), lack of virtual care training among providers, and low-levels of technical literacy among patients."*

7. Page 6. Section on Identifying relevant studies. This section is well written and these inclusion criteria seem appropriate. What is missing is the inclusion and exclusion criteria for the types of nursing roles and tasks within telehealth that will be included in the scoping review. Presumably independent provider roles, such as serving as the primary care provider addressing the patient's clinical needs during the telehealth including diagnoses and treatment will be included in the review. But what about a nursing assistant's and possibly LPN's role physically initiating the telehealth visit and then handing it over to the primary provider, or the nursing assistant's role calling the patient who failed to show up on a telehealth visit to offer assistance with the technology? What range of roles will be included in this review?

*The complexity of roles will vary across designations, as you stated, and we understand that clarification is needed within this section for readers to understand the roles being included. On p.6 para 3 under the Concept section, clarification was provided in two areas. First, "or LPNs" was added to the end of this sentence: "Action may involve interventions that are independent, dependent, or interdependent (as per the NREM); this labelling of roles may vary across nurse designations, whereby independent roles for NPs may be dependent roles for RNs or LPNs." As well, to address your comment and clarify the breadth of roles included, the following was added: "Roles will vary in complexity as scopes of practice differ widely across nurse designations. NP roles (as primary providers) may be more advanced than RN or LPN roles; for example, NPs may diagnose and treat patients independently while LPNs may be tasked with coordinating care or performing patient follow-up under the direction of a primary provider."*

**Reviewer #2:** Thank you for your submission, I enjoyed reading it. The methods are clearly explained.

1. Given this is an international review, the introduction and background are focused on Canada. It would perhaps be helpful to the reader if an international perspective were provided.

*To provide an international perspective, we removed some of the Canadian focused statements, such as in p.3 para 1: "Since the beginning of the COVID19 pandemic, virtual care (also known as telehealth) ~~in Canada~~ has gained significant attention in healthcare delivery and its use has increased considerably across healthcare systems." As well, where relevant international nursing literature was introduced (p. 4 para 1), further detail was provided to enhance the international perspective (at a glance): "The international literature from Australia and the United States has identified that nurses contribute meaningfully to virtual care delivery in primary care settings, particularly since the onset of the COVID-19 pandemic." Also, this sentence is based on international evidence from a recent systematic review (p.4 para 2): "Within the context of primary care, nursing roles may include chronic disease management, care coordination, and pharmaceutical management;[34] however, it remains unclear whether these same roles are carried out virtually by nurses in primary care." Throughout, we ensured nursing-specific material from across*



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*countries was included. This review will enhance our ability to discuss this topic from an international perspective going forward.*

We hope that we have adequately addressed the reviewer comments and we appreciate the constructive feedback that has undoubtably strengthened the overall quality of this manuscript.



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