PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Quality measures of virtual care in ambulatory healthcare environments: A scoping review
AUTHORS	Petrie, Samuel; Laur, Celia; Rios, Patricia; Suarez, Ally; Makanjuola, Oluwatoni; Burke, Emeralda; Bhattacharyya, Onil; Mukerji, Geetha

VERSION 1 – REVIEW

REVIEWER	Aryal, K. McMaster University, HEI
REVIEW RETURNED	04-Aug-2023

GENERAL COMMENTS	BMJ Open 1) You will need to revise grammar and formatting. Refrain from using i.e. in the first sentence of the abstract and run-on sentences. The objectives of the abstract need to be rewritten. 2) You do not mention ambulatory care in the objectives of your abstract. Please be clear. 3) First sentence of the introduction is very complex and run-on. This must be rewritten. 4) Introduction needs to be rewritten according to appropriate scoping review guidelines. The content is important but the writing is not up to par with BMJ Open's standards. 5) Report the age of adults in methods ex) 18-65? Older? What was the age cut-off 6) Can you explain why the Quintuple Aim Framework was used? Were there any other frameworks that were considered? 7) It seems that similar studies have been done previously, specifically reviews, as you mention in lines 312-318. It seems that this review is focusing more on assessing Qis using the framework. Justification about this and why it's important/needed is missing. Overall, very important work and assessment of the literature, however, the written language needs to be revised. Justification of the methods needs to be completed.

REVIEWER	Garcia, Marcelo V. University of the Basque Country
REVIEW RETURNED	10-Aug-2023

GENERAL COMMENTS	The scoping review aims to understand the connections between virtual care modalities and quality measures within the Quintuple Aim framework. The review analyzed publications that focused on virtual care in ambulatory settings and extracted indicators that were categorized based on the National Academy of Medicine

quality framework. The topic is interesting but has several issues listed below:

[1]. Are there any other reviews on this research topic? And compared with the existing studies, what are the main contributions of this review article?

[2] Upon a thorough examination of the review, it becomes apparent that the articulation of the research questions is not sufficiently clear. The review should be more focused on comprehending the alignment of quality measures specific to virtual care within ambulatory healthcare environments with the Quintuple Aim framework. Additionally, there is a distinct absence of emphasis on the identification of gaps within the existing quality measures for virtual care within these healthcare environments.

[3] A notable concern is the lack of transparency regarding the methodology employed for selecting the papers included in the review. The comment highlights the absence of information on how the papers were chosen for inclusion, and this omission hinders the review's credibility. To enhance the robustness of the methodology, the authors should provide a detailed account of their selection process, which should ideally encompass the criteria used for paper inclusion, such as relevance, impact factor, and citation count. Furthermore, the comment underscores the importance of acknowledging the relevance of the selected papers based on their impact factor or number of citations. This consideration is pivotal to ensuring that the review's findings are anchored in scholarly contributions that hold significant influence within the field of study.

The following statistical analyses could be conducted:

[4] Descriptive statistics: This analysis would provide a summary of the data collected, including measures of central tendency (mean, median, mode) and measures of variability (standard deviation, range, interquartile range).

[5] Inferential statistics: This analysis would allow the authors to draw conclusions about the population based on the sample data. For example, they could conduct a chi-square test to determine if there is a significant association between virtual care modalities and quality measures.

[6] Bibliometric analysis: This analysis would involve using software such as VOSviewer or CiteSpace to analyze the bibliographic data of the included articles. This would allow the authors to identify the most influential articles in the field and to visualize the relationships between different concepts.

By including these statistical analyses, the authors could provide a more robust and comprehensive analysis of the data, which would enhance the study's overall quality.

[7] The manuscript requires comprehensive development across its various sections, encompassing in-depth discussions, contributions, implications, and thoughtful exploration of limitations.

[8] A well-elaborated discussion section is essential to the manuscript, spanning a minimum of two pages. This discussion should intricately compare and contrast the solutions and results presented within the work with the existing body of literature. Furthermore, a dedicated subsection should elucidate the contributions the manuscript makes to theory, knowledge, and the broader literature landscape. This subsection should comprise at

least one to two paragraphs and be followed by another subsection delineating the implications of the study for practical application, spanning a minimum of one page. Within these paragraphs, the authors should undertake a comprehensive comparative analysis of their research approach in relation to preceding studies, citing relevant references to substantiate their comparisons.

[9] Within the conclusion section, a well-structured subsection devoted to the limitations of the study and avenues for future research is essential. This subsection should span one to two pages and delve into the constraints encountered during the research process while also suggesting promising directions for future inquiries.

[10] It is imperative that the overall document undergoes a meticulous review to rectify any grammatical, syntactical, and typographical errors. Based on the aforementioned feedback, there is a strong belief that the authors, upon undertaking a comprehensive revision of the manuscript as per the provided comments, will substantially elevate the quality of their work.

[11] A reconsideration of the explanation regarding the scientific contribution is advised, both within the introduction and the conclusion sections of the paper. This reconsideration should involve the integration of a structured comparison between the present research and relevant previous studies. While the text's length could be limited to a single paragraph, it should encapsulate a synthesis of the most pivotal studies that elucidate the uniqueness and significance of the manuscript's contribution.

[12] To shape the conclusion effectively, the following structure is suggested:

The first paragraph should offer a concise summary of the research undertaken and the conclusions derived from it.
The second paragraph should provide a comparative analysis of the present study in relation to prior research endeavors.
The third paragraph should briefly outline the practical implications emerging from the study's findings.
The fourth paragraph should offer a succinct overview of the paper's limitations while also hinting at the broader implications and potential directions for future exploration.

REVIEWER	Savira, Feby
	Deakin University Institute for Health Transformation
REVIEW RETURNED	10-Sep-2023

GENERAL COMMENTS	Thank you for the opportunity to read this interesting paper. I have some comments and suggestions.
	- In the abstract section please state how many grey literature sources, also need to say time period for the search
	- In the introduction it says the scoping review is limited to ambulatory/outpatient settings and this was not made immediately clear in the abstract nor in subsequent discussion of findings. Also it is not clear in the introduction why these settings were chosen as areas of focus
	- Line 116-119 is unclear

	- Why was WHO rapid review guide used for a scoping review study? - "Studies that focused on only one domain in a specific population were excluded" - is this referring to domain of the Quantuple Aim? Please clarify or define - The method section reads like a rapid review rather than scoping review - I think it would be better if the authors can provide some insights into whether certain modality or health condition is positively or negatively associated with certain measure (such as patient satisfaction, health outcomes etc). At the moment it is too descriptive and while I think the measures identified are useful, adding this element would elevate the manuscript and contribute strongly to the literature. I think this is what Figure 2 is trying to depict but there is little explanation in the manuscript itself - Please fix some typos and inconsistencies which can be found throughout the manuscript

REVIEWER	Butera, Gisela National Institutes of Health, National Institutes of Health Library
REVIEW RETURNED	02-Oct-2023

GENERAL COMMENTS	The authors conducted a scoping review on a very relevant and timely area of research on the quality of virtual care. They accurately provided a rationale for the need to perform a scoping review with interesting findings. Although there were strengths to the review, there are some areas in the manuscript and supplemental materials requiring editing, correction, and clarification.

VERSION 1 – AUTHOR RESPONSE

Comments to the Author
Reviewer 1: Dr. K. Aryal, McMaster University

1. You will need to revise grammar and formatting. Refrain from using i.e. in the first sentence of the abstract and run-on sentences. The objectives of the abstract need to be rewritten.

Thanks for your comment. The manuscript has been extensively revised, including the abstract. We hope the revisions improve clarity and flow of the narrative.

2. You do not mention ambulatory care in the objectives of your abstract. Please be clear.

Thanks for your comment. The ambulatory focus of our population of interest has been made explicit in the abstract. Mention of the ambulatory nature of our population occurs in lines 40 and 45.

3. First sentence of the introduction is very complex and run-on. This must be rewritten.

Thanks for your comment. The sentence has been revised to improve clarity and flow. Lines 76-78 now read as such: "Virtual care is defined as any interaction between patients and/or caregivers and their healthcare providers (or "circle of care") that occurs remotely and is facilitated through digital communication or other information technologies (1)."

4. Introduction needs to be rewritten according to appropriate scoping review guidelines. The content

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is important but the writing is not up to par with BMJ Open's standards.

Thank you for your comment regarding the introduction. The introduction has been revised to follow the PRISMA recommendations for scoping reviews. The rationale is now made clear according to PRISMA recommendations: https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item3.pdf and the objectives refined according to PRISMA recommendations: https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item4.pdf

For rationale, please see lines 87 to 94, which now read: "The future of healthcare delivery will require the integration of both virtual and in-person modalities across the continuum of care (6). To meet these needs, virtual care needs to be accessible and high quality; however there is little understanding of what constitutes a 'quality' encounter through virtual care for both patients and providers. Continued use and integration of virtual care into standard practice, in part, depends on its impact on the quality of care and the experiences of patients, caregivers, and healthcare providers."

For objectives, please see lines 107-110: "This scoping review was conducted with the aim to characterize existing quality indicators used to evaluate modalities of virtual care and categorize the indicators across the Quintuple Aim framework and National Academy of Medicine (NAM) quality framework (safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity)."

5. Report the age of adults in methods ex) 18-65? Older? What was the age cut-off

Thanks for your comment. The age of the population has been specified. Line 138 now reads: "adults (over 18 years of age) receiving ambulatory/outpatient care through healthcare organizations for chronic or acute/subacute conditions." There was no upper-age cut off.

6. Can you explain why the Quintuple Aim Framework was used? Were there any other frameworks that were considered?

Thanks for your comment. The Quintuple Aim provides a framework for advancing health care and examines provider experience, patient experience, per capita cost, population health, and health equity. This framework was used as this is the dominant paradigm that many of the virtual care programs are being evaluated by – particularly by funders (such as health authorities), and the decision makers who will be consulted as we move to the next phase of the project. As such, it seemed that it was the most relevant framework to those who would be using the information and those who will likely be seeking to implement and evaluate their own initiatives. We wanted to ensure our analysis is relevant to those who will be using this work, and the readers of this paper. Furthermore, the Quintuple Aim has been identified as the preferred framework by the Canadian Institutes of Health Research (CIHR), the primary funder of health research in Canada, which increases its relevance: https://cihr-irsc.gc.ca/e/52904.html

7. It seems that similar studies have been done previously, specifically reviews, as you mention in lines 312-318. It seems that this review is focusing more on assessing Qis using the framework. Justification about this and why it's important/needed is missing.

Thanks for your comment. Lines 280-289 have been revised to make explicit the value that this review adds as well as differentiating it more clearly from other reviews. The scoping review aims to understand the connections between virtual care modalities and quality measures within the Quintuple Aim framework. This review provides the foundation for identification and refinement of quality indicators in virtual care and highlights current gaps in assessment of virtual care performance indicators. Lines 280-289 now read: "Through systematically categorizing indicators across quality domains, this review identifies gaps within the existing quality measures for virtual care within these

ambulatory care environments. Best practice guidelines for virtual care are required to realize integration of virtual care across health systems (32,33). Results indicate that further development of evaluation methods specifically analyzing the equitable and cost-efficient deployment of virtual care are needed. Measurement of quality of virtual care will support understanding performance gaps, and targets for future quality improvement efforts and benchmarking efforts across organizations."

8. Overall, very important work and assessment of the literature, however, the written language needs to be revised. Justification of the methods needs to be completed.

Thanks for your comment and acknowledging the importance of the work. We have revised the manuscript to improve clarity of the purpose and flow of the narrative.

Reviewer 2: Dr. Marcelo V. Garcia, University of the Basque Country

Comments to the Author:
The scoping review aims to understand the connections between virtual care modalities and quality measures within the Quintuple Aim framework. The review analyzed publications that focused on virtual care in ambulatory settings and extracted indicators that were categorized based on the National Academy of Medicine quality framework. The topic is interesting but has several issues listed below:

1. Are there any other reviews on this research topic? And compared with the existing studies, what are the main contributions of this review article?

Thanks for your comment. As identified in lines 344-348, there are published syntheses in this area of research examining quality measures in virtual care: "There has been a considerable amount of work published about virtual care, and synthesis of that work. About a third of literature included in this scoping review were reviews themselves; however, these reviews usually were limited and focused on a specific service or modality of virtual care such as patient portals (24), telehealth/phone visits (25,26) and video consultations (27,28)."

This manuscript is the first, to the author's knowledge, which systematically categorizes quality indicators across two separate quality frameworks (National Academy of Medicine and Quintuple Aim) which helps identify gaps in monitoring quality for virtual care. This review is agnostic to virtual care modalities including remote care monitoring, video visits, telephone visits, patient portals, etc. The connection between virtual care modalities and quality domains identified through this review can inform clinicians, healthcare managers, and other decision makers, on how to monitor quality of virtual care and provides insights into existing gaps in quality measures. Further, this review maps indicators within the Quintuple Aim, an evaluative framework that is preferred by many healthcare knowledge users. This has been made clearer here (line 348-351): "To the authors' knowledge, this is the first review which specifically evaluates quality in virtual care with a comprehensive approach in defining quality indicators and assessing their use against established quality frameworks.

The contribution of the manuscript has been made more explicit and communicated more clearly, (lines 115-117): "This work will provide the foundation for identification and categorization of quality indicators that can inform clinicians, healthcare managers, and other decision makers how best to monitor quality of virtual care, identify performance gaps, and target areas for future improvement efforts."

2. Upon a thorough examination of the review, it becomes apparent that the articulation of the research questions is not sufficiently clear. The review should be more focused on comprehending the alignment of quality measures specific to virtual care within ambulatory healthcare environments

with the Quintuple Aim framework. Additionally, there is a distinct absence of emphasis on the identification of gaps within the existing quality measures for virtual care within these healthcare environments.

Thanks for your comments re: articulation of the research question. The introduction has been revised to align better with the PRISMA recommendations for scoping reviews (https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item3.pdf - rationale and https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item4.pdf - objectives). We hope that this revision will make the objectives and rationale for the study more clear.

For rationale, please see lines 87 to 93, which now read: "The future of healthcare delivery will require the integration of both virtual and in-person modalities across the continuum of care (6). To meet these needs, virtual care needs to be accessible and high quality; however there is little understanding of what constitutes a 'quality' encounter through virtual care for both patients and providers. Continued use and integration of virtual care into standard practice, in part, depends on its impact on the quality of care and the experiences of patients, caregivers, and healthcare providers."

For objectives, please see lines 107-110: "This scoping review was conducted with the aim to characterize existing quality indicators used to evaluate modalities of virtual care and categorize the indicators across the Quintuple Aim framework and National Academy of Medicine (NAM) quality framework (safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity)."

3. A notable concern is the lack of transparency regarding the methodology employed for selecting the papers included in the review. The comment highlights the absence of information on how the papers were chosen for inclusion, and this omission hinders the review's credibility. To enhance the robustness of the methodology, the authors should provide a detailed account of their selection process, which should ideally encompass the criteria used for paper inclusion, such as relevance, impact factor, and citation count. Furthermore, the comment underscores the importance of acknowledging the relevance of the selected papers based on their impact factor or number of citations. This consideration is pivotal to ensuring that the review's findings are anchored in scholarly contributions that hold significant influence within the field of study.

Thanks for your comment regarding better outlining the transparency of the methodology for papers identified in the review. We have added additional detail to the body of the manuscript and the addition of a new Supplemental File 3, which includes all of our search strategies, also adds to the detail of our methods. Further method details are also included in supplementary material: Supplementary File 1 PRISMA scoping review checklist; Supplementary File 2 Screening Criteria (figure), and Supplementary File 3 Database and Grey Literature Searches. Also in lines 126-177, we have included the description of study selection and databases searched. We have added further details, such as number of citations included from each source and number of hand searched citations included.

Regarding your suggestion to go into further detail on citation count etc., to assess the rigour of evidence, this approach is outside the scope of our scoping review. This is a scoping review, with the stated objective of systemically mapping the available evidence and aligning quality indicators of virtual care within the Quintuple Aim and NAM quality framework. Our aim was to map indicators to quality domains and highlight gaps, rather than apply any judgment criteria to the indicators. Particularly given the gaps that we did identify, our next step to use a consensus-based approach to refine the indicators in a more usable form, which will add that additional rigor. The lack of detail provided about the indicators in the papers also means that applying any rigorous methods at this stage would not be feasible, and we are not evaluating the quality of the individual studies as part of

this scoping review.

4. The following statistical analyses could be conducted: Descriptive statistics: This analysis would provide a summary of the data collected, including measures of central tendency (mean, median, mode) and measures of variability (standard deviation, range, interquartile range).

Thanks for your comment re: conducting a statistical analysis on the results of our review. Due to the heterogeneity of the studies, including aim, study type, population, sample size etc., we chose not to include this information as part of this scoping review. We have added descriptives that help to contextualize the studies. Our approach is similar to other scoping review methodology (see: https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item15.pdf, https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item16.pdf, https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item19.pdf).

5. Inferential statistics: This analysis would allow the authors to draw conclusions about the population based on the sample data. For example, they could conduct a chi-square test to determine if there is a significant association between virtual care modalities and quality measures.

Thanks for your comment re: inferential statistics. Please see the response to comments [3] and [4]. Inferential statistical approaches are outside the scope of a scoping review methodology.

6. Bibliometric analysis: This analysis would involve using software such as VOSviewer or CiteSpace to analyze the bibliographic data of the included articles. This would allow the authors to identify the most influential articles in the field and to visualize the relationships between different concepts. By including these statistical analyses, the authors could provide a more robust and comprehensive analysis of the data, which would enhance the study's overall quality.

Thanks for your comment re: bibliometric analysis. A bibliometric analysis is outside the scope of our objectives for this review.

7. The manuscript requires comprehensive development across its various sections, encompassing in-depth discussions, contributions, implications, and thoughtful exploration of limitations.

Thanks for your comment regarding the manuscript structure and style. It has been revised as per other reviewer comments. We hope the revisions address the issues raised.

8. A well-elaborated discussion section is essential to the manuscript, spanning a minimum of two pages. This discussion should intricately compare and contrast the solutions and results presented within the work with the existing body of literature. Furthermore, a dedicated subsection should elucidate the contributions the manuscript makes to theory, knowledge, and the broader literature landscape. This subsection should comprise at least one to two paragraphs and be followed by another subsection delineating the implications of the study for practical application, spanning a minimum of one page. Within these paragraphs, the authors should undertake a comprehensive comparative analysis of their research approach in relation to preceding studies, citing relevant references to substantiate their comparisons.

Thanks for your comment re: manuscript structure and style. We have bolstered the discussion which now spans lines 285-417 and included further details which outline the implications of the findings. We hope the revisions satisfy your concerns.

9. Within the conclusion section, a well-structured subsection devoted to the limitations of the study and avenues for future research is essential. This subsection should span one to two pages and delve

into the constraints encountered during the research process while also suggesting promising directions for future inquiries.

Thanks for your comment regarding highlighting the limitations of the study and avenues for future research. Lines 399-401 identify limitations within our literature search: "However, our search strategy was limited to English only, and relying on the past seven years meant that foundational work on the implementation of virtual care may have been excluded". Lines 407-415 identify limitations to the interpretation of virtual care quality indicators under our framework. "Indicators could overlap and routinely fit within more than one quality domain, and the lack of detail provided about each indicator meant that some assumptions were made, leading to subjectivity with current results. For example, patient-centered care was used very differently across studies, with some having it synonymous with patient satisfaction, while others acknowledged the multiple factors and complexity in delivery patient-centered care. To address this limitation we dual-coded all indicators, resolved discrepancy with a third reviewer and will be working with interprofessional decision makers and persons with lived experience as we develop the balanced scorecard." We hope the revisions address the comments raised.

10. It is imperative that the overall document undergoes a meticulous review to rectify any grammatical, syntactical, and typographical errors. Based on the aforementioned feedback, there is a strong belief that the authors, upon undertaking a comprehensive revision of the manuscript as per the provided comments, will substantially elevate the quality of their work.

Thanks for your comment re: manuscript structure and style. We have done a careful review of the manuscript to correct grammatical, syntactical, and typographical errors.

11. A reconsideration of the explanation regarding the scientific contribution is advised, both within the introduction and the conclusion sections of the paper. This reconsideration should involve the integration of a structured comparison between the present research and relevant previous studies. While the text's length could be limited to a single paragraph, it should encapsulate a synthesis of the most pivotal studies that elucidate the uniqueness and significance of the manuscript's contribution.

Thanks for your comments regarding the scientific contribution of the article. The objectives and focus of the manuscript have been made more explicit (see response to comment [2]), including further highlighting our aim. We have also reworked the introduction, discussion and conclusion to clarify our points. We hope the revision makes clear the impact of the manuscript's findings and gap the article addresses.

12. To shape the conclusion effectively, the following structure is suggested:

The first paragraph should offer a concise summary of the research undertaken and the conclusions derived from it.
The second paragraph should provide a comparative analysis of the present study in relation to prior research endeavors.
The third paragraph should briefly outline the practical implications emerging from the study's findings.
The fourth paragraph should offer a succinct overview of the paper's limitations while also hinting at the broader implications and potential directions for future exploration.

Thanks for your feedback. The discussion has been updated to be more aligned with this structure, and the conclusion updated to provide a summary and closing statement for the paper.

Reviewer 3: Dr. Feby Savira, Deakin University Institute for Health Transformation

Comments to the Author:
Thank you for the opportunity to read this interesting paper. I have some comments and suggestions.

1. In the abstract section please state how many grey literature sources, also need to say time period for the search

Thanks for your comment. The number of search engines and websites used for the grey literature search along with the search dates have been added to the abstract (lines 41-44): "Five databases (Medline, Embase, PsycInfo, Cochrane Library, JBI) and grey literature sources (11 websites, 3 search engines) were searched from 2015-June 2021 and again in August 2022 for publications that analysed virtual care in ambulatory settings."

2. In the introduction it says the scoping review is limited to ambulatory/outpatient settings and this was not made immediately clear in the abstract nor in subsequent discussion of findings. Also it is not clear in the introduction why these settings were chosen as areas of focus

Thanks for your comment re: ambulatory patient population. Justification for focusing on the ambulatory patient population has been added to the introduction, (lines 112-114): "Our review focused on ambulatory patients as virtual care has a considerable role for access to care; hospitalized in-patients have unique characteristics with higher acuity rendering higher need for in-person care and therefore not included in this review." Further, this population has been mentioned throughout the paper. We hope this makes the focus more consistent and clearer.

3. Line 116-119 is unclear

Thanks for your comment. The introduction has been substantially revised to better align with PRISMA-ScR guidelines (please see: https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item3.pdf and https://knowledgetranslation.net/wp-content/uploads/2019/05/PRISMA-ScR_TipSheet_Item4.pdf). We hope this satisfies your concerns.

For rationale please see lines 86 to 93, which now read: "The future of healthcare delivery will require the integration of both virtual and in-person modalities across the continuum of care (6). To meet these needs, virtual care needs to be accessible and high quality; however there is little understanding of what constitutes a 'quality' encounter through virtual care for both patients and providers. Continued use and integration of virtual care into standard practice, in part, depends on its impact on the quality of care and the experiences of patients, caregivers, and healthcare providers."

For objectives, please see lines 107-111: "This scoping review was conducted with the aim to characterize existing quality indicators used to evaluate modalities of virtual care and categorize the indicators across the Quintuple Aim framework and National Academy of Medicine (NAM) quality framework (safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity)."

4. Why was WHO rapid review guide used for a scoping review study?

Thanks for your comment re: WHO rapid review guide. We have revised the paper to consistently frame the review as a scoping review, not a rapid review. We have removed the WHO rapid review citation entirely.

5. "Studies that focused on only one domain in a specific population were excluded" - is this referring to domain of the Quintuple Aim? Please clarify or define

Thanks for this comment. Lines 152-155 have been added to clarify the identified line. We hope the

added clarification satisfies your concerns. "Included papers must have addressed multiple domains within the Quintuple Aim, or a domain with the Quintuple Aim and NAM quality framework. Studies that focused on only one domain in a specific population were excluded."

6. The method section reads like a rapid review rather than scoping review

Thanks for your comment. As noted earlier, we have removed the reference to a rapid review.

7. I think it would be better if the authors can provide some insights into whether certain modality or health condition is positively or negatively associated with certain measure (such as patient satisfaction, health outcomes etc). At the moment it is too descriptive and while I think the measures identified are useful, adding this element would elevate the manuscript and contribute strongly to the literature. I think this is what Figure 2 is trying to depict but there is little explanation in the manuscript itself

Thanks for your comment re: further analysis of modality v. quality indicator. Figure 2 attempts to depict the connections between different modalities and health condition. We have added further detail regarding this point into the results section. Lines 247-259 also explore the relationship between modalities and quality indicators. "Connections between virtual care modalities within the Quintuple Aim framework and NAM quality domains are visualized in Figure 2. Within the Quintuple Aim, the most reported category related to patient experience (n=200 indicators), followed by provider experience (n=52), population health outcomes (n=47), health system costs (n=22), and equity (n=7). Virtual visits by phone and/or video (n=96) were the most common modality of virtual care reported, and was strongly connected to patient experience, provider experience, and population health outcomes (Fig 2). Virtual visits (video only) (n=60) and remote monitoring (n=56) were the next most common, also connecting strongly to patient experience, provider experience, and population health outcomes.
Within the NAM quality domains, the most common sub-coded domains included patient centeredness (n=66), effectiveness (n=64), sustainability (n=36), and efficiency of care (n=36) (Fig 2)".

8. Please fix some typos and inconsistencies which can be found throughout the manuscript

Thanks for your comment. We have done a careful read to correct typos and inconsistencies.

Reviewer 4: Ms. Gisela Butera, National Institutes of Health

Comments to the Author:
The authors conducted a scoping review on a very relevant and timely area of research on the quality of virtual care. They accurately provided a rationale for the need to perform a scoping review with interesting findings. Although there were strengths to the review, there are some areas in the manuscript and supplemental materials requiring editing, correction, and clarification.

Thank you for your comment. We have gone through the paper to add detail within multiple sections, clarify points of confusion suggested by other reviewers, added more details regarding our methodology, clarified our aim and rationale, as well as strengthened our discussion of results and the impact the manuscript could have on policy-makers and decision-makers implementing their own virtual care initiatives.