

Peer Review File

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Reviewer A

Comment 1: Line 40: In the Abstract, the authors wrote “We conducted a review of articles published between November 2010 to November 2022.” However, in Table 1, the timeframe is “Last 10 years (November 2012 - November 2022).”

Reply 1: Thank you for catching this discrepancy between the text and Table 1. The correct years in which our review was conducted was for November 2012 to November 2022.

Changes in the text: Line 46, Methods section – 2010 was changed to 2012 to accurately depict the timeline for this review and to resolve the discrepancy between text and Table 1 (see Page 3, Line 59 in updated version with Tracked Changes).

Comment 2: The objective says: “Through this review, we set out to answer the following key questions: what mobile apps currently exist for parents of NICU babies, what information do these mobile apps provide, and what further research and app development would further benefit this especially vulnerable patient population and their caregivers?” However, the Results (Narrative Review) and Discussion sections focus on app development processes and how the app and its effects can be tested and evaluated. More in depth description in the results is needed to provide readers with a comprehensive understanding of what information the mobile apps provide and what strategies can be used to benefit vulnerable populations.

Reply 2: We appreciate the suggestion that our Results and Discussion does not focus enough on the core research questions posed at the beginning of our manuscript. We have therefore included additional discussion about information provided by each mobile app highlighted within the text and Narrative Review section. This information is also provided in a concise Table format (Table 5).

Changes in the text: Several sentences have been added throughout the section entitled “Narrative Review,” which specifically address the question of what information each mobile app provides. We hope that the newly added Table 5, which is entitled “Information Mobile Apps Provide and their Noteworthy Features,” will also serve to fill some of the original gaps noted by this reviewer in the response to our research question about information in mobile apps. See Page 7, Lines 197-203 for in-text description of Table 5. See Pages 9-10, Lines 273-280. Also see Page 10, Lines 291-295 for example of more information provided by each mobile app highlighted.

Comment 3: In Table 3, population above gestational age 35 weeks are excluded. However, Garfield et al. (2022), one of the articles included, includes participants up to 37 weeks gestational age. The information is conflicting.

Reply 3: Thank you for pointing out this discrepancy in inclusion criteria for study participants in the articles included in our narrative review. Since there are some medical reasons for which newborns may be admitted to the NICU other than prematurity, we have altered the population criteria outlined in Table 3 to reflect and include those alternative reasons for NICU admission more accurately.

Changes in the text: Table 3 inclusion criteria for “Intended Mobile App Beneficiaries” now

includes “Neonates, premature infants, and/or medically complex infants requiring NICU admission.” Table 3 exclusion criteria no longer lists full term babies in general and instead specifically includes “Health newborns born full term, late preterm newborns not requiring NICU admission, fetal/prenatal health, pregnant patients.”

Comment 4: In Table 3, the inclusion and exclusion criteria are confusing. The participants of research conducted by Garfield et al. (2022), Jani et al. (2021), Lakshmanan et al. (2022), and Spargo et al. (2018) are the parents or caregivers, instead of the preterm infants. However, it is reported that adults and children are excluded. Please restate to make it clearer that the app included are for adults caring for infants.

Reply 4: Thank you for highlighting the potential confusion associated with the inclusion/exclusion criteria listed in Table 3. We have made some significant changes to Table 3 to address, and hopefully resolve, the conflicting information about study participants.

Changes in the text: Table 3 categories were altered to now include a separate section for “Intended Mobile App Beneficiaries” and for “Intended Mobile App Users.” These two separate rows now address different inclusion and exclusion criteria of these two separate target populations.

Comment 5: As one of the objectives described in Introduction is to find out “what information do these mobile apps provide,” it is suggested that the authors have a more in-depth discussion on what resources the apps included in the narrative review provide.

Reply 5: We appreciate that the original draft of our manuscript may not have adequately addressed our research question about the information provided by mobile apps for parents of NICU babies. We have therefore made significant alterations to the “Narrative Review” and “Discussion” sections of the text to highlight some of the key features and information provided in various mobile applications. We have also added a new Table in the “Tables and Figures” to provide succinct and detailed descriptions of the information provided by these mobile apps.

Changes in the text: Several sentences have been added throughout the section entitled “Narrative Review,” which specifically address the question of what information each mobile app provides. We hope that the newly added Table 5, which is entitled “Information Mobile Apps Provide and their Noteworthy Features,” will also serve to fill some of the original gaps noted by this reviewer in the response to our research question about information in mobile apps. See Page 7, Lines 197-203 for in-text description of Table 5. See Pages 9-10, Lines 273-280. Also see Page 10, Lines 291-295 for example of more information provided by each mobile app highlighted.

Comment 6: In addition to describing the findings of the four articles that provide insight on app development in the results section, it would be great if the authors can discuss what challenges there may be during app development.

Reply 6: Thank you for suggesting that we include a discussion about potential challenges in the process of app development. We agree that this discussion will enhance the topic of our manuscript.

Changes in the text: We have added an entire subsection to the Discussion entitled “Potential Challenges to App Development,” which details a variety of potential challenges that may occur on the path to app development. See Page 17, Lines 447-461.

Reviewer B

Comment 1: This article aims to “provide a structured assessment of the existing mobile apps intended for use by parents of preterm and medically complex newborns as their babies complete the transition from NICU to home” (line 97-99). Because you exclude term infants in your search (table 3) you might be more explicit on this and rather write “medically complex preterm infants”.

In general, "NICU babies" are both preterm and term infants and you may be more explicit about choice of term throughout the article.

Reply 1: Thank you for recognizing some of the potential discrepancies between language surrounding both search criteria and language in general that we use to describe infants admitted to the NICU. We have made some significant alterations to Table 3 to address some of the concerns that arose regarding both the target study population and to enhance clarity of the terminology used to describe the infants who may indirectly benefit from their caregivers' use of mobile apps. We have also attempted to streamline and more explicitly define this terminology in the body of the text.

Changes in the text: Throughout the text, we have altered the language surrounding the target patient population to refer to “NICU babies” and/or “babies who required NICU admission.” We believe that these two terms more accurately represent the scope of this narrative review. We have addressed this concern surrounding choice of term in the Introduction – “Rationale and Knowledge Gap” section (see Lines 120-125).

Comment 2: Your research questions are: what mobile apps currently exist for parents of NICU babies, what information do these mobile apps provide, and what further research and app development would further benefit this especially vulnerable patient population and their caregivers? If the applications you have found aims at medical complexity at discharge, it would be interesting to know what kind of medical complexity they aim at (e.g., nutrition, respiratory support, HLR etc), and how they solve to support the variety of medical challenges parents encounter. It would be useful and illustrative if you present your results in a table showing the name of the mobile application, app characteristics and the information they provide.

Reply 2: We appreciate your recommendation to include additional details about app characteristics and information. We agree that this information, as well as details about how different apps aim to support the variety of medical challenges parents may encounter. We have therefore made significant alterations to the “Narrative Review” and “Discussion” sections of the text to highlight some of the key features and information provided in various mobile applications. We have also added a new Table in the “Tables and Figures” to provide succinct and detailed descriptions of the information provided by these mobile apps.

Changes in the text: Several sentences have been added throughout the section entitled “Narrative Review,” which specifically address the question of what information each mobile app provides. We hope that the newly added Table 5, which is entitled “Information Mobile Apps Provide and their Noteworthy Features,” will also serve to fill some of the original gaps noted by this reviewer in the response to our research question about information in mobile apps. Table 5 also highlights some of the ways that medical challenges are addressed through mobile applications. For example, the “Babble” app includes a repository of educational topics including expected problems and common neonatal diseases. See Page 7, Lines 197-203 for in-text description of Table 5. See Pages 9-10, Lines 273-280. Also see Page 10, Lines 291-295 for

example of more information provided by each mobile app highlighted.

Comment 3: You have grouped findings of your narrative review by: 1) App development, 2) Testing and evaluation, and 3) Alternative review of existing mobile apps, and 4) Excluded articles. You have described some characteristics and the information they provide under “App development” and “Excluded Articles”, but because this is one of your key research questions, I suggest you highlight this issue in the structure of your findings. Preferably, you could add this information in the suggested table (comment 2).

Reply 3: We appreciate that the original draft of our manuscript may not have adequately addressed our research question about the information provided by mobile apps for parents of NICU babies. We have therefore made significant alterations to the “Narrative Review” and “Discussion” sections of the text to highlight some of the key features and information provided in various mobile applications. We have also added a new Table in the “Tables and Figures” to provide succinct and detailed descriptions of the information provided by these mobile apps.

Changes in the text: Several sentences have been added throughout the section entitled “Narrative Review,” which specifically address the question of what information each mobile app provides. We hope that the newly added Table 5, which is entitled “Information Mobile Apps Provide and their Noteworthy Features,” will also serve to fill some of the original gaps noted by this reviewer in the response to our research question about information in mobile apps. See Page 7, Lines 197-203 for in-text description of Table 5. See Pages 9-10, Lines 273-280. Also see Page 10, Lines 291-295 for example of more information provided by each mobile app highlighted.

Comment 4: This is a narrative review, which is less systematic and thorough than a systematic review, and some developed applications may be overlooked. Using a broad search term as “neonatal*” or “NICU*” as key words may result in a broad spectrum of mobile apps, but at the same time articles not using these keywords might be missed. Please mention this as a limitation.

Reply 4: Thank you for suggesting that the broad search terms used may have been a limitation of this narrative review, in addition to the less systematic nature of a narrative review in general.

Changes in the text: We have added a paragraph within the Strengths and Limitations section of the Discussion to directly address broad search terms as a potential limitation of our narrative review. See Page 18, Lines 516-523.

Comment 5: The section “Other NICU Mobile App solutions” (line 362-393) is, as you say, not in the scope of this review, and I suppose these are the same applications that you have excluded in your method section (line 130-136). Applications developed for health care workers are not described in the objective of your study (line 97-103). I therefore recommend you to remove line 379 to 384 from the manuscript. In line 370-377 you describe clinical applications, but it is unclear to me if these are meant for parents or health care workers. Hence, the whole “Other NICU Mobile App solutions” section do not add information to answer your research question and could preferably be removed.

Reply 5: We agree that the section “Other NICU Mobile App solutions,” while potentially interesting or useful to some readers, does not address any of our intended research questions nor were the target groups of those apps described in our study objective.

Changes in the text: As suggested, we have removed the entire section entitled “Other NICU Mobile App solutions” from the text.

Reviewer C

Comment 1: Well written article, on a clinically relevant subject. I believe that this review of existing applications will add to the established literature, and may help to address a need for families of a NICU infant.

Reply 1: Thank you for your enthusiasm and consideration for this topic and our narrative review.

Comment 2: (Line 66-69) This sentence is confusing, recommend rewriting.

Reply 2: Thank you for suggesting clarification on this sentence. The sentence has been rewritten and broken up to increase clarity and succinctness.

Changes in the text: The lines indicated (Line 70-74 in the updated text) have been altered to instead read as follows: “These unique difficulties include mitigation of emotional distress and preparedness to care for a medically complex newborn. Existing research demonstrates that a smooth transition home depends upon successful communication with health providers and provision of adequate and appropriate education during hospitalization.”

Comment 3: (Line 71-73) This can be a common challenge for many – would recommend not singling out groups, but instead talk about characteristics that would be a challenge (i.e., tech literacy, healthcare literacy, language barriers).

Reply 3: Thank you for pointing out that these challenges may impact a broader scope of potential groups/populations. We have changed the language and phrasing of this sentence to more fully encompass the general characteristics you recommended.

Changes in the text: Lines 91-93 in the updated text now read as follows: “Additional barriers and difficulties in this process often arise for families with low socioeconomic backgrounds, those with less healthcare literacy, and for parents who do not speak English or are non-native English speakers.”

Comment 4: (Line 99-100): “The following questions were addressed:”

Reply 4: Thank you for requesting increased conciseness and clarity in these lines. The sentence has been altered as suggested.

Changes in the text: The suggested edits were made to these lines (Lines 101-102 in the updated text) such that the sentence now reads as follows. “Through this review, the following questions were addressed...”

Reviewer D

Comment 1: This is a well-done review of apps developed/being developed to support parents from the NICU.

Reply 1: Thank you for your enthusiasm and consideration for this topic and our narrative review.