Reviewer’s report

Title: Designing a Multifaceted Telehealth Intervention for a Rural Population Using a Model for Developing Complex Interventions in Nursing

Version: 1 Date: 18 Dec 2019

Reviewer: Esther Johnstone

Reviewer's report:

NURS-D-19-00236R1:
Again, I would like to thank you for the opportunity to peer review this manuscript as I had accepted this manuscript on October 25th, 2019.
However, as reviewer #1, I have reviewed the 2nd reviewer's comments and found more detailed information as requested from reviewer #2.
Reviewer #2 comments related to Page 3, Lines 60-71
Is the intent of this study to design for telehealth services for those with long-term needs in the community or propose a model that can help design telehealth interventions? If the former, then it would be helpful to include some statistics on the need for long-term care services at rural communities.
Page 3, Lines 37- 54 states: "Transitioning individuals from long-term care facilities to their own homes in the community requires multiple key intervention elements including: (a) educating the individual and caregiver about common, unplanned transitions in care (e.g., facility readmission, unintended emergent admission, etc.) and ways to delay or avoid the transition; (b) providing timely communication among everyone involved, including the individual, caregiver and care team; (c) involving the individual and caregiver in establishing goals of care; (d) comprising a strong collaborative interprofessional team; and, (e) implementing evidence-based models of practice.
Page 4, Line 15 states: "However, design and implementation of telehealth programs can be complex due to the wide range of devices and applications available and multiple stakeholders who may have competing visions and goals".
Page 4, Line 30-47: "Addressing these multiple barriers has been associated with successful telehealth implementations. In a review of 45 papers describing telemedicine interventions, Broens et al. [12] observed the following five categorical determinants of success: technology, acceptance, financing, organization, and policy/legislation. Thus, successful implementation in daily practice has been linked to determinants that are important to different stakeholders in different domains [12]. However, the complexity of addressing these multiple determinants has contributed to a gap between the design of evidence-based, pilot telehealth interventions and implementation into practice".
Page 4, line 47 states: "However, the complexity of addressing these determinants has contributed to a gap between the design of evidence-based, pilot telehealth interventions and implementation into practice".
Page 4, Line 59, & Page 5, Line 4 states, "Incorporation of a range of stakeholder viewpoints is especially important in the design of a Structured Process for Telehealth Intervention Development 5 telehealth interventions for individuals with long-term conditions (LTCs).
Page 4, Line 59 states: "Incorporation of a range of stakeholder viewpoints is especially important in the design of telehealth interventions for individuals with long-term conditions (LTCs).
Page 5, Line 55-60 states, "The specific goal of this project was to collaborate with, provide insight to, and develop a pilot telehealth demonstration for recipients of Medicaid home and community-based services in the State of West Virginia (WV)".
Reviewer #2 comments related to Page 4, Lines 75 - 80:

The considerations and challenges of "designing" and "implementing" telehealth seem to be incomplete. It would strengthen the rationale for this study if the authors include models that have been used by other groups and if or not they were successful. Additionally, the article by Vassilev and colleagues (see below) conduct a review on what are the key elements for a successful intervention that might help rationalize the author's proposed model approach.

Page 4, Line 30-47: "Addressing these multiple barriers has been associated with successful telehealth implementations. In a review of 45 papers describing telemedicine interventions, Broens et al. [12] observed the following five categorical determinants of success: technology, acceptance, financing, organization, and policy/legislation. Thus, successful implementation in daily practice has been linked to determinants that are important to different stakeholders in different domains [12]. However, the complexity of addressing these multiple determinants has contributed to a gap between the design of evidence-based, pilot telehealth interventions and implementation into practice".

Page 5, Line 17 states: "To address these design and implementation concerns, we used a theory-based process that directly incorporates multiple stakeholder views with the environmental context, the Model for Developing Complex Interventions in Nursing (MDCN), to guide the development of a telehealth pilot intervention. The purpose of this article is two-fold 1) to present a translation of the MDCN into an iterative process that resulted in the design of a telehealth intervention for participants with LTCs; and, 2) to serve as a guide for others wishing to design a telehealth intervention in their own settings and populations.

Reviewer #2:

Provide details on who participated in the meetings and how the decisions were made- Who were the participants of the meetings (background) and how many were part of the core group? How were they selected? Were decisions made using a vote?

Page 6, Lines 18-48 states: "As part of this collaboration, a design team comprised of telehealth experts from West Virginia University and state stakeholders affiliated with WVBMS was established. The design team included: a health policy, management, and leadership (HPML) faculty member; an HPML graduate student; a program manager with graduate training in HPML and business administration; two telehealth experts with a combined 30 years experience implementing telehealth in rural communities; and, state stakeholders purposely selected by the TMH Director based on subject matter expertise and familiarity with the target population. State stakeholders included: the TMH Director; the BMS medical director and two BMS nurses; the program manager for the state traumatic brain injury (TBI) waiver and manager of the organization providing care management services to TBI waiver participants; the director of the WV Home and Community-Based Services program; one Medicaid Waiver participant advocate; and, the chief operations officer and regional manager of homemaker services for Medicaid recipients.

Page 5, Line 48 states: "All decisions related to the telehealth design were made by consensus".

Reviewer #2: Pages 5 - 13:

The readability of the paper will significantly improve if the authors separate the methods from the results. Additionally, a summary table with the meeting number, intent/goals/process, actions/results might help orient the reader of what was done and then what was ultimately accomplished.

Page 5, Line 36: Contains the Method Section.
Page 7, Line 49: Contains the Results Section.
Page 8, Line 4: Contains Table 1. Meeting agendas and outcomes guided by the Model for Developing Complex Interventions in Nursing (MDCN).

Reviewer #2 Page 6, Line 142 - 144:

What was the rationale for selecting the target population? In order to reuse this model the
authors might want to mention the basis for each decision instead of just stating it.

Page 9, Line 46, Page 10, Line 4-14 states: "The second meeting defined the target population in preparation to identify the overall intervention objectives. The design team selected the following target population: Medicaid Traumatic Brain Injury (TBIW) and Aged and Disabled (ADW) Waiver participants (ages 18 and older) who elect to participate in accessing the Waiver TMH Transition Program to support their transition from long-term care facilities to the community with rolling enrollment to begin in the fall of 2019. As guided by the model, the target population was selected based on the first step, problem identification. To come to this conclusion, the group considered and discussed the information and knowledge gathered through the practice, policy, and needs analysis in relation to the four groups of individuals that qualify for home services already being provided. Based on this knowledge, the group decided that two groups would benefit from telehealth services. Additionally, the group discussion highlighted that if the project was feasible, acceptable, and successful, scalability of the intervention to other populations could happen in the future.

Reviewer #2 Page 17, Line 380:

It would be nice to amend Figure 2 to better visualize the ways the chronic care model was operationalized for this project. Therefore, instead of using the original model as figure 2, recreate the figure to include how the intervention fits into this model.

Page 20, Figure 1. Model for Developing Complex Interventions in Nursing
Page 21, Figure 2. Operationalized Chronic Care Model

Reviewer #2 Discussion/Conclusion

Is this model only applicable to state and local government run programs or can health systems and hospitals use it to? As of now, it is unclear who is the audience for this manuscript.

Page 10, Line 7-14 states; "Based on this knowledge, the group decided that two groups would benefit from telehealth services. Additionally, the group discussion highlighted that if the project was feasible, acceptable, and successful, scalability of the intervention to other populations could happen in the future".

Page 15, Line 50-55 & Page 16, Line 4-9 states: "While the first implementation of this telehealth is targeted to a specific population, future use is intended for other populations and practice settings if the results of this trial are successful. The content of this intervention in its present iteration is reflective of current empirical evidence about the use of telehealth, a specific needs analysis, and has been adapted based on feedback from a wide variety of stakeholders. This translated process could be adapted to design other interventions in a variety of settings and clinical populations. For example, health systems could use this approach to implement programs in response to a community needs assessment.

Reviewer #2:

The authors should elaborate in this section on how these "results" fill the gap in the literature.

Page 8, Line 4: Contains Table 1. Meeting agendas and outcomes guided by the Model for Developing Complex Interventions in Nursing (MDCN).

Reviewer #2:

Please include any limitations to this approach.

Page 16, Line 12 - 31 states: "There are limitations to this type of approach. Assembling the right stakeholders requires connecting disperse individuals with academic and pragmatic knowledge. Additionally, the ability to engage in open collegial, and multi-directional dialogue is required. Time can be an issue in working through the process in multiple ways. Scheduling meetings requires gathering multiple busy individuals and in addition to the time required in meetings, independent work
and reflection is required between meetings. Lastly, the academic research process of designing large randomized controlled trials may not be possible within the given workflows and cost constraints of established practices. Control groups, population focus, and length of intervention may be based on cost of implementation instead of the gap in the current science.

As Reviewer #1, in my humble opinion, each valid concern has been addressed by the authors' of this manuscript.
Thank you for the opportunity to peer review this manuscript. I accept this manuscript for publication.
Dr. Johnstone

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?
4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal