PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Experiences of digital communication with automated patient interviews and asynchronous chat in Swedish primary care - a qualitative study
AUTHORS	Entezarjou, Artin; Bolmsjö, Beata; Calling, Susanna; Midlöv, Patrik; Milos Nymberg, Veronica

VERSION 1 – REVIEW

REVIEWER	Berglind Smaradottir University of Agder, Norway
REVIEW RETURNED	12-Feb-2020

GENERAL COMMENTS	Abstract: you might consider to not use abbreviation (PHCC) in the abstract, but instead wait until the introduction. The results in the abstract: has limited content. Only the thematic groups. The thematic groups might be a part of the method. You repeat “into one comprehensive theme” twice, consider to write it only once in the abstract, as the space is limited. Instead, tell the reader something about the results. The abstract tells nothing about the amount of participants. Introduction: a clear research question. A bit short state of the art. Method: How long were the interviews? How did you recruit the participants in each group? Results: well presented. Discussion: consider to use another analogy, it is confusing to understand the comparison of family life and the use of digital systems: “One might envision staff experience of working with digital communication to that of receiving a new son- or daughter-in-law, with the family representing the primary care system. Such a newcomer may be perceived to bring both risks and benefits to the family, while altering family dynamics. A son in-law, for example, may be perceived as safe and secure by one’s daughter (in this metaphor representing the patients). At the same time, the newcomer may not agree with everyone in the family, and both parties may need to develop new qualities to accept each other long-term.” Focus rather on the research question, and how your findings relate to that one. You could reflect on whether mixing GPs and nurses did impact on the study results. Did both groups speak freely? Did you consider to interviews divided into professions? Very few references both in discussion and no one in conclusion. References: in general, quite few references.

REVIEWER	Helen Atherton Warwick Medical School, UK
REVIEW RETURNED	31-Mar-2020

GENERAL COMMENTS	Thank you for the opportunity to read this interesting study in a topical area. I found it easy to read and well written. I have suggestions to make to improve the clarity of what you did, and what the platform involves and to ensure that the reader understands the limitations of the data. General comments: This study is a small qualitative study comprising 3 focus groups that included, in total 19 participants. For a qualitative study, size is not the focus, however there are limitations to your sample that are not acknowledged, with findings are presented in a way that implies that this was a much bigger study with definitive answers. This study is a very interesting exploratory study which gives some indication about how this platform functions and is experienced, but presently the study is written up as though the findings are definitive. You have not placed the findings in context in the discussion for the reader to understand where your work fits. Introduction You refer to e-health, though this is an old term which is ill defined and does not match the use of the term digital communication. Reference number two is 8 years old and thus not relevant - there are other current references that could be used instead to make this more relevant. You mention the heterogeneity of tools which is important, but do not clearly define the tool you are interested in and how it works, and where it sits. I would be clear from the outset what type of tool you are talking about. Your definition does not say what happens to the patient once the practice receives the interview data, other than 'asynchronous chat-based communication if needed' - is it a triage tool, a two way communication tool? This all matters in setting out the background literature, because I can't place where this sits. Paragraph 3 on page 4 seems to be about Sweden but this is not clear. If it is about Sweden can you clarify this? As several of the statements are not correct for other areas of the world e.g. little being known about staff experiences. The two UK papers referenced refer to online triage tools that are not a two-way communication (patients have a telephone consult as a result of their online enquiry), so could you find references that are more relevant here? I disagree that nurse perspectives have not been assessed anywhere and my own work has included nurse perspectives. This reflects the lack of background literature referenced in the introduction, and I think means you are not telling the full story. Methods Please could you add some information about how you sampled practices? Was this a convenience sample? Did you select just three from a wide range offering this? Were they local? How did you sample healthcare professionals? Convenience sampling, or did you select for maximum variability? This has a bearing on the rigour of your sample and thus data. The data analysis section does not say what kind of analysis you did. Please can you add this and explain the rationale for choosing this approach? Exploratory studies are not necessarily well suited to

	content analysis (it says in the abstract you did content analysis, but does not say this in the methods) and so it would be good to understand why you chose this method. There is a lot of detail given on the coding, but this is not necessary as this is part of the analysis process and does not add anything to the methods. This might be because you have not explained the method. The approach taken is very categorical (which seem fairly quantitative in nature), and given that you have data from just three focus groups, it means the results appear to be very descriptive. Results: Following on from this, there is a long list of categories and subcategories - from just three focus groups this has to just be a list of what people said, grouped. I could not see any evidence that themes had been linked, or were seen to be linked. That is a real shame because I am sure there must be something in your data that goes into more depth. The use of italics in the text to show subcategories is distracting. The subcategories seem to be descriptions of what is said. it would be good instead to see more in-depth analysis within the six themes/categories without worrying about every last thing that someone said as being a subcategory. There are several points at which you state that something has happened e.g. page 8, line 20, where you say that 'questionnaires reduced human error.' This might be what someone perceived but from the data you have no way of knowing if that is actually the case. It feels like you are overstating the benefits of the system by presenting data in this way. There are several instances of this throughout the results. It would be good to see the results be more in-depth and less descriptive, on the whole. Discussion: The main findings section should be a concise summary of the key findings. The reference to one overarching theme is misleading, because it does not fit with the method. The metaphor just confuses things so I would take that out as it does not help the reader to understand the main findings. In the strengths section you refer to 'interviews' but these were focus groups, so please clarify. The limitations section does not include anything about sampling, about how this was a small study and a new technology - presumably adopted by people who were interested in using it, though this is not clear in the manuscript. The general discussion requires a more thorough discussion of the existing literature, with particular reference to qualitative research beyond the two studies that are referenced, and comparisons should be drawn between what you have found and what others have shown as there is considerable overlap. This will help the reader to place your work in context. There is no mention of what research should come next and what is missing and this would be helpful. Conclusion The final sentence seems to me to be an exaggeration of your findings. They indicate certain things but don't illustrate that this particular approach is here to stay.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Reviewer Name: Berglind Smaradottir
Institution and Country: University of Agder, Norway
Please state any competing interests or state 'None declared': None declared.
Response: Dear Dr Smaradottir, thank you for taking the time to provide us with insightful and thoughtful comments on our manuscript. We have addressed each of your comments below.

Abstract: you might consider to not use abbreviation (PHCC) in the abstract, but instead wait until the introduction.
Response: The abbreviation PHCC has been removed from the abstract, as well as the repeated phrase.

The results in the abstract: has limited content. Only the thematic groups. The thematic groups might be a part of the method. You repeat "into one comprehensive theme" twice, consider to write it only once in the abstract, as the space is limited. Instead, tell the reader something about the results. The abstract tells nothing about the amount of participants.
Response: We have now added text to the Results section to summarize the interpretation of the new themes.

Introduction: a clear research question. A bit short state of the art.
Response: We have reformulated the introduction and clarified how the platform in the current study fits into clinical practice.

Method: How long were the interviews? How did you recruit the participants in each group?
Response: Interview duration has now been added to table 2.

Results: well presented.
Response: Thank you. We have made some changes in the results section as appropriate given the other suggestions.

Discussion: consider to use another analogy, it is confusing to understand the comparison of family life and the use of digital systems: "One might envision staff experience of working with digital communication to that of receiving a new son- or daughter-in-law, with the family representing the primary care system. Such a newcomer may be perceived to bring both risks and benefits to the family, while altering family dynamics. A son in-law, for example, may be perceived as safe and secure by one's daughter (in this metaphor representing the patients). At the same time, the newcomer may not agree with everyone in the family, and both parties may need to develop new qualities to accept each other long-term." Focus rather on the research question, and how your findings relate to that one.
Response: Thank you for the feedback on our analogy. Upon reviewing our categories, two distinct themes emerged. PHCC staff experienced "digitally filtered primary care" while also "adjusting to a new medium of communication". We consider these themes a more appropriate fit compared to the previously used analogy. The abstract, discussion, and conclusions are modified accordingly.

You could reflect on whether mixing GPs and nurses did impact on the study results. Did both groups speak freely? Did you consider to interviews divided into professions?
Response: We acknowledge that mixing professions likely impacted the study results and have added a segment on this in the limitations section. We did consider interviews divided into professions.

However, having both professions present at the same time also opened up opportunities for further exploration of experiences shared by both professions, as new insights could be reached through inter-professional dialogue. Thus, we do not consider mixed interviews a limitation per se, but certainly an aspect that influences our results. Please see lines 391 to 394 in the revised unmarked manuscript for our reformulation.

Very few references both in discussion and no one in conclusion. References: in general, quite few references.
Response: Additional references have been added to the discussion. As the goal of our conclusion is to summarize our findings in relation to our research question, we have chosen not to include references in this segment. The following references have been added to the new manuscript:
4. Atherton H. Digitally enabled primary care: the emperor's new clothes? British Journal of General Practice 2019;69(686):420. doi: 10.3399/bjgp19X705125
5. Scott Kruse C, Karem P, Shifflett K, et al. Evaluating barriers to adopting telemedicine worldwide: A systematic review. J Telemed Telecare 2018;24(1):4-12. doi: 10.1177/1357633x16674087 [published Online First: 2018/01/13]
10. Clarke AL, Roscoe J, Appleton R, et al. "My gut feeling is we could do more..." a qualitative study exploring staff and patient perspectives before and after the implementation of an online prostate cancer-specific holistic needs assessment. BMC health services research 2019;19(1):115. doi: 10.1186/s12913-019-3941-4 [published Online First: 2019/02/14]
11. Lie SS, Karlsen B, Graue M, et al. The influence of an eHealth intervention for adults with type 2 diabetes on the patient-nurse relationship: a qualitative study. Scandinavian journal of caring sciences 2019;33(3):741-49. doi: 10.1111/scs.12671 [published Online First: 2019/03/14]
12. Griffiths F, Bryce C, Cave J, et al. Timely Digital Patient-Clinician Communication in Specialist Clinical Services for Young People: A Mixed-Methods Study (The LYNC Study). Journal of medical Internet research 2017;19(4):e102. doi: 10.2196/jmir.7154 [published Online First: 2017/04/12]
13. Odendaal WA, Anstey Watkins J, Leon N, et al. Health workers' perceptions and experiences of using mHealth technologies to deliver primary healthcare services: a qualitative evidence synthesis. The Cochrane database of systematic reviews 2020;3(3):Cd011942. doi: 10.1002/14651858.CD011942.pub2 [published Online First: 2020/03/28]
17. Graneheim UH, Lindgren BM, Lundman B. Methodological challenges in qualitative content analysis: A discussion paper. Nurse Educ Today 2017;56:29-34. doi: 10.1016/j.nedt.2017.06.002 [published Online First: 2017/06/27]
21. Johansson A, Larsson M, Ivarsson B. General Practitioners' Experiences of Digital Written Patient Dialogues: A Pilot Study Using a Mixed Method. J Prim Care Community Health 2020;11:2150132720909656. doi: 10.1177/2150132720909656 [published Online First: 2020/03/07]
22. Pereira Gray DJ, Sidaway-Lee K, White E, et al. Continuity of care with doctors-a matter of life and death? A systematic review of continuity of care and mortality. BMJ Open 2018;8(6):e021161. doi: 10.1136/bmjopen-2017-021161 [published Online First: 2018/07/01]
24. Rogers EM. Lessons for guidelines from the diffusion of innovations. The Joint Commission journal on quality improvement 1995;21(7):324-8. [published Online First: 1995/07/01]

Reviewer: 2
Reviewer Name: Helen Atherton
Institution and Country: Warwick Medical School, UK
Please state any competing interests or state 'None declared': None

Please leave your comments for the authors below
Thank you for the opportunity to read this interesting study in a topical area. I found it easy to read and well written. I have suggestions to make to improve the clarity of what you did, and what the platform involves and to ensure that the reader understands the limitations of the data.

Response: Dear Dr Atherton, thank you for taking the time to read our manuscript and to provide insightful comments so that we may improve its quality. Please see our response to each of your suggestions below.

General comments:
This study is a small qualitative study comprising 3 focus groups that included, in total 19 participants. For a qualitative study, size is not the focus, however there are limitations to your sample that are not acknowledged, with findings are presented in a way that implies that this was a much bigger study with definitive answers. This study is a very interesting exploratory study which gives some indication about how this platform functions and is experienced, but presently the study is written up as though the findings are definitive. You have not placed the findings in context in the discussion for the reader to understand where your work fits.
Response: We intend to place our finding in the appropriate context and have adjusted our manuscript accordingly. Please see adjustments to formulations results and discussion section, as well as our response to the comments below.

Introduction:
You refer to e-health, though this is an old term which is ill defined and does not match the use of the term digital communication. Reference number two is 8 years old and thus not relevant - there are other current references that could be used instead to make this more relevant.
Response: We have removed the term e-health, as we agree that a more specific term like telemedicine would be relevant here. We also removed reference two, and instead added a recent reference by Kruse et al highlighting staff experience as barriers to widespread telemedicine implementation. Please see rows 57 to 59 in the unmarked revised manuscript.

You mention the heterogeneity of tools which is important, but do not clearly define the tool you are interested in and how it works, and where it sits. I would be clear from the outset what type of tool you are talking about. Your definition does not say what happens to the patient once the practice receives the interview data, other than 'asynchronous chat-based communication if needed' - is it a triage tool, a two way communication tool? This all matters in setting out the background literature, because I can't place where this sits.
Response: We have reordered the paragraphs in the introduction and clarified how the platform in the current study fits into clinical practice.

Paragraph 3 on page 4 seems to be about Sweden but this is not clear. If it is about Sweden can you clarify this? As several of the statements are not correct for other areas of the world e.g. little being known about staff experiences.
Response: After additional literature searches, we have now restructured these paragraphs to cite research from several different countries to give a more accurate presentation of the current state of the literature, and we have thus removed the statement regarding little being known about staff experiences. Instead, we highlight the gap in the literature regarding staff experiences in the context of the currently studied platform setup with an adapted report of patient expectations and symptoms combined with two-way digital communication.

The two UK papers referenced refer to online triage tools that are not a two-way communication (patients have a telephone consult as a result of their online enquiry), so could you find references that are more relevant here?
Response: Our revised literature search identified few studies on two-way patient provider communication outside of specific contexts such as prostate cancer, diabetes care, young people with long-term conditions or various mobile health interventions in rural Africa as identified by a Cochrane Review. Please see rows 78 to 83 in the unmarked revised manuscript as well as the following added references:

4. Atherton H. Digitally enabled primary care: the emperor's new clothes? British Journal of General Practice 2019;69(686):420. doi: 10.3399/bjgp19X705125
5. Scott Kruse C, Karem P, Shifflett K, et al. Evaluating barriers to adopting telemedicine worldwide: A systematic review. J Telemed Telecare 2018;24(1):4-12. doi: 10.1177/1357633x16674087 [published Online First: 2018/01/13]
10. Clarke AL, Roscoe J, Appleton R, et al. "My gut feeling is we could do more..." a qualitative study exploring staff and patient perspectives before and after the implementation of an online prostate cancer-specific holistic needs assessment. BMC health services research 2019;19(1):115. doi: 10.1186/s12913-019-3941-4 [published Online First: 2019/02/14]
11. Lie SS, Karlsen B, Graue M, et al. The influence of an eHealth intervention for adults with type 2 diabetes on the patient-nurse relationship: a qualitative study. Scandinavian journal of caring sciences 2019;33(3):741-49. doi: 10.1111/scs.12671 [published Online First: 2019/03/14]
12. Griffiths F, Bryce C, Cave J, et al. Timely Digital Patient-Clinician Communication in Specialist Clinical Services for Young People: A Mixed-Methods Study (The LYNC Study). Journal of medical Internet research 2017;19(4):e102. doi: 10.2196/jmir.7154 [published Online First: 2017/04/12]
13. Odendaal WA, Anstey Watkins J, Leon N, et al. Health workers' perceptions and experiences of using mHealth technologies to deliver primary healthcare services: a qualitative evidence synthesis. The Cochrane database of systematic reviews 2020;3(3):Cd011942. doi: 10.1002/14651858.CD011942.pub2 [published Online First: 2020/03/28]
17. Graneheim UH, Lindgren BM, Lundman B. Methodological challenges in qualitative content analysis: A discussion paper. Nurse Educ Today 2017;56:29-34. doi: 10.1016/j.nedt.2017.06.002 [published Online First: 2017/06/27]
21. Johansson A, Larsson M, Ivarsson B. General Practitioners' Experiences of Digital Written Patient Dialogues: A Pilot Study Using a Mixed Method. J Prim Care Community Health 2020;11:2150132720909656. doi: 10.1177/2150132720909656 [published Online First: 2020/03/07]
22. Pereira Gray DJ, Sidaway-Lee K, White E, et al. Continuity of care with doctors-a matter of life and death? A systematic review of continuity of care and mortality. BMJ Open 2018;8(6):e021161. doi: 10.1136/bmjopen-2017-021161 [published Online First: 2018/07/01]
24. Rogers EM. Lessons for guidelines from the diffusion of innovations. The Joint Commission journal on quality improvement 1995;21(7):324-8. [published Online First: 1995/07/01]

I disagree that nurse perspectives have not been assessed anywhere and my own work has included nurse perspectives. This reflects the lack of background literature referenced in the introduction, and I think means you are not telling the full story.
Response: We have added recently published work by Johansson and colleagues where GP and nurse experiences of an early pilot version of the studied platform is evaluated using surveys. Much of the research on nurse perspectives we identified were in contexts different from our current study, including patient-feedback, but we have added references to give a more nuanced picture of the literature as specified above.

Methods:
Please could you add some information about how you sampled practices? Was this a convenience sample? Did you select just three from a wide range offering this? Were they local? How did you sample healthcare professionals? Convenience sampling, or did you select for maximum variability? This has a bearing on the rigour of your sample and thus data.
Response: The Context section is now updated where we specify the purposeful sampling of our practices from a wide range of practices offering the platform.

The data analysis section does not say what kind of analysis you did. Please can you add this and explain the rationale for choosing this approach? Exploratory studies are not necessarily well suited to content analysis (it says in the abstract you did content analysis, but does not say this in the methods) and so it would be good to understand why you chose this method.

Response: We have modified the data analysis section to clarify the rationale for our choice of qualitative content analysis. Please see rows 120-127 in the unmarked revised manuscript.

There is a lot of detail given on the coding, but this is not necessary as this is part of the analysis process and does not add anything to the methods. This might be because you have not explained the method.
The approach taken is very categorical (which seem fairly quantitative in nature), and given that you have data from just three focus groups, it means the results appear to be very descriptive.
Response: Details about the coding process have been removed to instead focus more on the rationale of our choice of analysis.

Results:
Following on from this, there is a long list of categories and subcategories - from just three focus groups this has to just be a list of what people said, grouped. I could not see any evidence that themes had been linked, or were seen to be linked. That is a real shame because I am sure there must be something in your data that goes into more depth.
Response: We agree that the list of subcategories is extensive and have revised this list to fewer but broader sub-categories. We believe this now makes the data more easily interpretable to the reader. The use of descriptive categories is intentional to stay true to our choice of analysis method, as Graneheim and Lundman 2003 state that “a category refers mainly to a descriptive level of content and can thus be seen as an expression of the manifest content of the text”, while a “a theme can be seen as an expression of the latent content of the text”. With our new subcategories and new themes, we now consider the data to be presented in a manner which is both interpretable and true to our choice of method.

The use of italics in the text to show subcategories is distracting. The subcategories seem to be descriptions of what is said. it would be good instead to see more in-depth analysis within the six themes/categories without worrying about every last thing that someone said as being a subcategory.
Response: We have removed the use of italics and reduced the focus on mentioning every subcategory in the results section, with a shifted focus towards a more in-depth analysis as suggested. We have also reclassified the category “An Incomplete System” to a subcategory under “Doesn’t Suit Everyone and Everything” as the previous subcategories were judged similar enough to combine, and as the specifics of technical improvements are not central to the aim of this study. With these changes, we consider the results section more congruent towards the aim of understanding staff experience of digital communication.

There are several points at which you state that something has happened e.g. page 8, line 20, where you say that 'questionnaires reduced human error.' This might be what someone perceived but from the data you have no way of knowing if that is actually the case. It feels like you are overstating the benefits of the system by presenting data in this way. There are several instances of this throughout the results. It would be good to see the results be more in-depth and less descriptive, on the whole.
Response: We have rephrased several statements to clarify that they reflect staff perceptions (lines 146, 151, 160, 168, 170, 194-195, 221, 233-238, 250, 254, 280-281, 293-294, 304, and 305-309 in the unmarked revised manuscript). Sentences have also been added to add depth to the presentation of the results (lines 176-178 and lines 236-237 in the unmarked revised manuscript). We now consider the results presented in a way that justly presents the platform from the perspective of our participants.

Discussion:
The main findings section should be a concise summary of the key findings.
Response: We have rephrased this segment to one concise paragraph concisely summarizing the main findings and moved the theme discussion to a separate subheading. Please see rows 323-326

in the unmarked revised manuscript.

The reference to one overarching theme is misleading, because it does not fit with the method. The metaphor just confuses things so I would take that out as it does not help the reader to understand the main findings.
Response: Thank you for the feedback on our analogy. Upon reviewing our categories, two distinct themes emerged. PHCC staff experienced “digitally filtered primary care” while also “adjusting to a new medium of communication”. We consider these themes a more appropriate fit compared to the previously used analogy. The abstract, discussion, and conclusions are modified accordingly.

In the strengths section you refer to 'interviews' but these were focus groups, so please clarify.
Response: The term “interviews” has been replaced with “focus groups” to clarify that we are referring to focus group interviews. Please see rows 382 and 391 in the unmarked revised manuscript.

The limitations section does not include anything about sampling, about how this was a small study and a new technology - presumably adopted by people who were interested in using it, though this is not clear in the manuscript.
Response: The Limitations section has been updated to include these points. Please see rows 387-390 in the unmarked revised manuscript.

The general discussion requires a more thorough discussion of the existing literature, with particular reference to qualitative research beyond the two studies that are referenced, and comparisons should be drawn between what you have found and what others have shown as there is considerable overlap. This will help the reader to place your work in context.
Response: A total of ten new references have now been added to the manuscript, many of which are qualitative studies investigating two-way digital communication as described in the updated Discussion section. Please see refences 4, 5, 10, 11, 12, 13, 17, 21, 22, and 24 (list previously provided above).

There is no mention of what research should come next and what is missing and this would be helpful.
Response: This has been added to the conclusion. Please see rows 401-402 in the unmarked revised manuscript.

Conclusion:
The final sentence seems to me to be an exaggeration of your findings. They indicate certain things but don't illustrate that this particular approach is here to stay.
Response: The final sentence has been removed and the prior sentence reformulated.

VERSION 2 – REVIEW

REVIEWER	Berglind Smaradottir University of Agder, Norway
REVIEW RETURNED	05-May-2020

GENERAL COMMENTS	Thanks for the revision of the manuscript. The manuscript has been revised with sufficient changes and modifications due the comments from previous round. All text has consequently been improved due to readability of presentation and English grammar. Particularly the results and discussion are now well-written, clearly presenting the results. A minor comment on the references: they need to be reorganised

	regarding the order of them and check that everyone is present in the text, for instance ref 2, 18 and 23.