PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	COVID-19 vaccine barriers and perception among rural adults: A qualitative study in Bangladesh
AUTHORS	Khanam, Mansura; Sanin, Kazi; Rita, Razia Sultana; Akand, Farhana; Rabbi, Md Fozla; Hasan, Md. Khaledul; Alam, Tasnia; Ahmed, Tahmeed

VERSION 1 – REVIEW

REVIEWER	Al-Mistarehi, Abdel-Hameed The Johns Hopkins University School of Medicine
REVIEW RETURNED	11-Apr-2023

GENERAL COMMENTS	This qualitative cross-sectional study has a significant added value to the literature, as it sheds light on the factors contributing to COVID-19 vaccine hesitancy, such as the perceptions and barriers in Bangladeshi rural areas. The study involves 15 in-depth interviews with rural adults and two key informant interviews with healthcare workers. The manuscript is well-written. The introduction provides Background and information relevant to the study and includes the aims and objectives of the study. The methods are straightforward. The results are easy to follow, and the statistical tests are accurate. The findings described by the authors correlate with the results, and the conclusion correlates with the study findings and results. 1- The period of study conduction (between August 2021 to February 2022) should be included in the abstract. 2- Could the authors provide a supplementary file with the questions of the interviews to make the methods replicable? 3- I suggest providing the supplementary guidelines checklist used for reporting this study: The Standards for Reporting Qualitative Research (SRQR) Checklist or COREQ (COnsolidated criteria for REporting Qualitative research) Checklist or others. 4- Also, I encourage the investigators to compare their findings with the previously validated questionnaires on the Knowledge, perception, attitudes, and barriers aspects of the COVID-19 vaccine. Here are some helpful references: a) Malik AA, McFadden SM, Elharake J, Omer SB. Determinants of COVID-19 vaccine acceptance in the US. EClinicalMedicine 2020;26:100495. b) Al-Mistarehi AH, Kheirallah KA, Yassin A, Alomari S, Aledrisi MK, Bani Ata EM, Hammad NH, Khanfar AN, Ibnian AM, Khassawneh BY. Determinants of the willingness of the general population to get vaccinated against COVID-19 in a developing country. Clin Exp Vaccine Res. 2021 May;10(2):171-182. doi: 10.7774/cevr.2021.10.2.171. Epub 2021 May 31. PMID: 34222130; PMCID: PMC8217585.

	c) Dryhurst S, Schneider CR, Kerr J, et al. Risk perceptions of COVID-19 around the world. J Risk Res 2020;23:994-1006. d) Leiserowitz A. Climate change risk perception and policy preferences: the role of affect, imagery, and values. Clim Chang 2006;77:45-72. e) Van der Linden S. The social-psychological determinants of climate change risk perceptions: towards a comprehensive model. J Environ Psychol 2015;41:112-24. f) Xie B, Brewer MB, Hayes BK, McDonald RI, Newell BR. Predicting climate change risk perception and willingness to act. J Environ Psychol 2019;65:101331. g) Guidry JP, Laestadius LI, Vraga EK, et al. Willingness to get the COVID-19 vaccine with and without emergency use authorization. Am J Infect Control 2021;49:137-42. h) Myers LB, Goodwin R. Determinants of adults' intention to vaccinate against pandemic swine flu. BMC Public Health 2011;11:15. i) Coe AB, Gatewood SB, Moczygemba LR, Goode JV, Beckner JO. The use of the health belief model to assess predictors of intent to receive the novel (2009) H1N1 influenza vaccine. Innov Pharm 2012;3:1-11.

REVIEWER	Tibbels, Natalie Jean Johns Hopkins University
REVIEW RETURNED	28-Apr-2023

GENERAL COMMENTS	Thank you for the opportunity to read this interesting paper summarizing insights from a qualitative study in Bangladesh. Overall the paper would benefit from more precision in the methods and more depth in the findings and discussion. Introduction: Please give some context on the COVID-19 vaccination situation at the time of data collection so that the participant's perspectives are more easy to understand. Were multiple brands available? Did people have a choice of brands? Was a second dose recommended for all brands? Were pregnant women eligible? Methods: Please describe more about the study sites and why they were chosen. Please explain, given the research questions, how you arrived at a qualitative methodology and specifically individual interviews (for example, rather than focus group discussions). Were IDIs safer considering the COVID-19 restrictions, or did the guides lend themselves more to individual perspectives than perceived norms, etc. Please ensure abbreviations for KIIs and IDIs are consistent. Please give more detail about the end-of-project survey. Was it quantitative? Was it the same people? It is never discused again so I wonder why it is mentioned here. The coding process is unclear in certain places. Were the codes you applied to the data the four themes listed in "thematic area"? Using both deductive and inductive coding produced only four codes? How did you ensure inter-coder reliability if only one transcript was verified by the last author? (I think it's ok that one author coded almost all of the transcripts, but I would not emphasize inter-coder reliability then). What are the five indicators mentioned at the end of the data analysis section – are those

	different from the four indicators mentioned in the thematic area section? Please add more specifics about how participants were recruited – how were they identified and why were they selected? What were they told about the purpose of the study and how their responses would be used? What is the distribution of people who have no doses vs 1 dose? Results: Can you comment on why the participants were all under the age of 40, considering older populations tend to be a priority audience for COVID-19 vaccination? I would rephase the second sentence in the second paragraph to "the maximum number of members in any household was…" unless you mean that you grouped participants by household. Were any participants in the same household? Knowledge and perception aspects: is the idea that COVID-19 is a "highly contagious and life-threatening illness" the author's point of view or participants' point of view? If participants, I would rephrase: "Participants described COVID-19 as a highly contagious and life threatening illness and stated they first learned about it from…" Myths and misconceptions: I would move the first sentence to the introduction or the discussion, and focus on the participants in your study for the findings section. Please clarify perceived risk of COVID vs risks of the vaccine. Did participants think that children would get an infection (i.e. the virus) from the vaccine, or were at a higher risk of COVID-19? Consider moving the quote illustrating fears for elderly people before the sentence about children. Overall I would like more depth and nuance in the myths and misconceptions section. Are you framing all fears about side effects as a misconception? Or the fear of severe side effects or death – if so, how did they weigh the risk of vaccine side effects against the risk of COVID-19? What were the assumptions you mention that people made that made the vaccination process difficult? Is the belief that one dose is enough more of a knowledge issue or a misinformation/misconception issue? The comment about vaccines reducing the number of dogs requires more interpretation. Practice and attitude: This is a broad category and seems to cover perceived safety, perceived norms, collective responsibility, preferences about brands, access to information, affect (fear), and then at the end switches to COVID-19 testing rather than vaccination. Please consider revising this section, perhaps discussing fewer attitudinal predictors of behavior but each one in a bit more depth (perhaps using terms related to the vaccine hesitancy framework you introduced?) Barriers and challenges: The issues with the SMS reminders, vaccination cards, and health worker staffing are important insights. However, what is the difference between a barrier and a challenge? The SMS issue seems to relate to access or activation (from the framework you mentioned in the introduction).

	In the same vein, I wonder if the social norms and religious barriers goes better into the attitude section, leaving the last section then focused on access issues. Discussion: This is the first time slum dweller is mentioned. If that's an important characteristic of participants, please introduce it earlier. The discussion is the first time participants' experiences with minor side effects is mentioned. That should be mentioned in the findings if it's important to the discussion. The sentence "our study revealed that almost all the participants were motivated to get vaccinated based on the perception that it would…" is confusing. We don't know the vaccination status of the participants except they all had either 0 or 1 dose (and if 1 dose, they were supposed to get a second dose). Does this mean that almost all participants had 1 dose? Were there differences between those with no doses and those with 1 dose? I enjoyed the discussion around collective responsibility and perceived efficacy (that the vaccine will work for them, that the vaccine will work to get things back to normal). You mentioned the 5As framework (and might be worth looking at the 5Cs) in the introduction but then did not explicitly return to it - if you are using that framework, might be worth a paragraph to consider the findings and which "As" applied and which ones did not.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Abdel-Hameed Al-Mistarehi, Jordan University of Science and Technology

Comments to the Author:
This qualitative cross-sectional study has a significant added value to the literature, as it sheds light on the factors contributing to COVID-19 vaccine hesitancy, such as the perceptions and barriers in Bangladeshi rural areas. The study involves 15 in-depth interviews with rural adults and two key informant interviews with healthcare workers. The manuscript is well-written. The introduction provides Background and information relevant to the study and includes the aims and objectives of the study. The methods are straightforward. The results are easy to follow, and the statistical tests are accurate. The findings described by the authors correlate with the results, and the conclusion correlates with the study findings and results.

1- The period of study conduction (between August 2021 to February 2022) should be included in the abstract.
Response: Thank you for your suggestion. We have added the date in the abstract. (Page: 1, Line: 23)

2- Could the authors provide a supplementary file with the questions of the interviews to make the methods replicable?

Response: We have provided the supplementary file.

3- I suggest providing the supplementary guidelines checklist used for reporting this study: The Standards for Reporting Qualitative Research (SRQR) Checklist or COREQ (COnsolidated criteria for REporting Qualitative research) Checklist or others.

Response: We have added the COREQ Checklist in the revised version.

4- Also, I encourage the investigators to compare their findings with the previously validated questionnaires on the Knowledge, perception, attitudes, and barriers aspects of the COVID-19 vaccine. Here are some helpful references:
a) Malik AA, McFadden SM, Elharake J, Omer SB. Determinants of COVID-19 vaccine acceptance in the US. EClinicalMedicine 2020;26:100495.
b) Al-Mistarehi AH, Kheirallah KA, Yassin A, Alomari S, Aledrisi MK, Bani Ata EM, Hammad NH, Khanfar AN, Ibnian AM, Khassawneh BY. Determinants of the willingness of the general population to get vaccinated against COVID-19 in a developing country. Clin Exp Vaccine Res. 2021 May;10(2):171-182. doi: 10.7774/cevr.2021.10.2.171. Epub 2021 May 31. PMID: 34222130; PMCID: PMC8217585.
c) Dryhurst S, Schneider CR, Kerr J, et al. Risk perceptions of COVID-19 around the world. J Risk Res 2020;23:994-1006.
d) Leiserowitz A. Climate change risk perception and policy preferences: the role of affect, imagery, and values. Clim Chang 2006;77:45-72.
e) Van der Linden S. The social-psychological determinants of climate change risk perceptions: towards a comprehensive model. J Environ Psychol 2015;41:112-24.
f) Xie B, Brewer MB, Hayes BK, McDonald RI, Newell BR. Predicting climate change risk perception and willingness to act. J Environ Psychol 2019;65:101331.
g) Guidry JP, Laestadius LI, Vraga EK, et al. Willingness to get the COVID-19 vaccine with and without emergency use authorization. Am J Infect Control 2021;49:137-42.
h) Myers LB, Goodwin R. Determinants of adults' intention to vaccinate against pandemic swine flu. BMC Public Health 2011;11:15.
i) Coe AB, Gatewood SB, Moczygemba LR, Goode JV, Beckner JO. The use of the health belief model to assess predictors of intent to receive the novel (2009) H1N1 influenza vaccine. Innov Pharm 2012;3:1-11.

Response: Thank you for your important suggestions. We have revised our manuscript and added the citations accordingly.

Reviewer: 2
Natalie Jean Tibbels, Johns Hopkins University

Comments to the Author:
Thank you for the opportunity to read this interesting paper summarizing insights from a qualitative study in Bangladesh. Overall the paper would benefit from more precision in the methods and more depth in the findings and discussion.

Introduction:
Please give some context on the COVID-19 vaccination situation at the time of data collection so that the participant's perspectives are more easy to understand. Were multiple brands available? Did people have a choice of brands? Was a second dose recommended for all brands? Were pregnant women eligible?
Response: Thank you very much for your valuable suggestions. Now we have revised it accordingly. (Page: 3,4, Line: 68-94)

Methods:
Please describe more about the study sites and why they were chosen.
Response: Thank you very much for your suggestion. We have included the details methods in the revised version of the manuscript. (Page: 5, Line: 118-133)

Please explain, given the research questions, how you arrived at a qualitative methodology and specifically individual interviews (for example, rather than focus group discussions). Were IDIs safer considering the COVID-19 restrictions, or did the guides lend themselves more to individual perspectives than perceived norms, etc.

Response: We have chosen individual interviews over focus group discussions because of the ongoing Covid-19 restrictions that time. It was not permitted to gather multiple individuals in one place at a time.

Please ensure abbreviations for KIIs and IDIs are consistent.

Response: We have revised it accordingly. (Page: 5, Line: 138, 139)

Please give more detail about the end-of-project survey. Was it quantitative? Was it the same people? It is never discused again so I wonder why it is mentioned here.

Response: Thank you for identifying the issue. We apologize for this. It's a typing mistake from our end. We have deleted this.

The coding process is unclear in certain places. Were the codes you applied to the data the four themes listed in "thematic area"? Using both deductive and inductive coding produced only four codes? How did you ensure inter-coder reliability if only one transcript was verified by the last author? (I think it's ok that one author coded almost all of the transcripts, but I would not emphasize inter-coder reliability then). What are the five indicators mentioned at the end of the data analysis section – are those different from the four indicators mentioned in the thematic area section?
Response: Thank you for identifying the issues. We apologize for the mistake. We have revised it now thoroughly. Yes, the codes applied to the data were the four themes listed in the "thematic area". Our coding process involves a combination of deductive and inductive approaches. Initially, we used deductive coding to establish a predefined set of codes. However, as we analyzed the data, we also employed inductive coding to identify new codes and continuously refine our coding system. Following the coding process, thematic codes were categorized and subsequently grouped under the four themes. (Page: 7, Line: 184-196)

Please add more specifics about how participants were recruited – how were they identified and why were they selected? What were they told about the purpose of the study and how their responses would be used?
Response: Thank you for your valuable suggestions. We have added and revised it now. (Page: 6, Line: 152-170)

What is the distribution of people who have no doses vs 1 dose?
Response: Thank you for your comments. We have added the distribution of people who have no doses vs 1 dose in the demographic table. (Page: 9, Line: 230)

Results:
Can you comment on why the participants were all under the age of 40, considering older populations tend to be a priority audience for COVID-19 vaccination?

Response: We didn't have any specific inclusion criteria regarding age groups. Consequently, it happened that all of the participants were under the age of 40 due to randomly selection of the participants and given consent.

I would rephrase the second sentence in the second paragraph to "the maximum number of members in any household was…" unless you mean that you grouped participants by household.

Response: Thank you for identifying the issue. No, none of the participants were in the same household. (Page: 9, Line: 226, 227)

Knowledge and perception aspects:
is the idea that COVID-19 is a "highly contagious and life-threatening illness" the author's point of view or participants' point of view? If participants, I would rephrase: "Participants described COVID-19 as a highly contagious and life threatening illness and stated they first learned about it from…"
Response: Thank you for bringing this to my attention. I have changed it according to your suggestion. (Page: 10, Line: 238,239)

Myths and misconceptions:
I would move the first sentence to the introduction or the discussion, and focus on the participants in your study for the findings section.
Response: Thank you very much for the suggestion. We have deleted it.

Please clarify perceived risk of COVID vs risks of the vaccine.
Response: Perceived risk of COVID is discussed in the knowledge and perception section. In myths and misconceptions, we only discuss the misconceptions about the vaccine.

Did participants think that children would get an infection (i.e. the virus) from the vaccine, or were at a higher risk of COVID-19? Consider moving the quote illustrating fears for elderly people before the sentence about children.
Response: Thank you for the comments. Some participants made assumptions or had misconceptions that children could get an infection from the COVID vaccine. (Page: 11, Line: 283-286)

Overall I would like more depth and nuance in the myths and misconceptions section. Are you framing all fears about side effects as a misconception? Or the fear of severe side effects or death – if so, how did they weigh the risk of vaccine side effects against the risk of COVID-19? What were the assumptions you mention that people made that made the vaccination process difficult? Is the belief that one dose is enough more of a knowledge issue or a misinformation/misconception issue?
Response: Thank you for your comments. No, I am not framing all fears about side effects as misconceptions. In this case, the misconception pertains specifically to concerns about infections or conspiracy theories about vaccination. It's worth noting that the children's vaccination campaign had not yet commenced in Bangladesh at that time, but certain assumptions were already being made about it. Additionally, there is a prevailing belief that one dose is sufficient, despite our government emphasis on receiving the second dose or booster shot. (Page: 11, 12, Line: 275-302)

The comment about vaccines reducing the number of dogs requires more interpretation.
Response: Thank you for the comments. We have revised it now. (Page: 12, Line: 295-302)

Practice and attitude:
This is a broad category and seems to cover perceived safety, perceived norms, collective responsibility, preferences about brands, access to information, affect (fear), and then at the end switches to COVID-19 testing rather than vaccination. Please consider revising this section, perhaps

discussing fewer attitudinal predictors of behavior but each one in a bit more depth (perhaps using terms related to the vaccine hesitancy framework you introduced?)
Response: Thank you for your valuable suggestion. We have revised it now. (Page: 12, 13, Line: 304-333)

Barriers and challenges:
The issues with the SMS reminders, vaccination cards, and health worker staffing are important insights. However, what is the difference between a barrier and a challenge? The SMS issue seems to relate to access or activation (from the framework you mentioned in the introduction).
In the same vein, I wonder if the social norms and religious barriers goes better into the attitude section, leaving the last section then focused on access issues.
Response: Thank you for raising these issues. Now we have revised it accordingly. Barriers and challenges are often used interchangeably in research, yet they carry different connotations. Barriers refer to obstacles that hinder progress or prevent something from occurring, while challenges signify milestones that require effort and perseverance to achieve. For instance, a barrier to the mass vaccination program could be the absence of vaccine cards or SMS notifications for follow-up doses, which may impede individuals from receiving their second vaccination. On the other hand, a challenge could be losing the vaccination card, which would require downloading a new one from the website. While this represents a more positive perspective, both terms can be used based on individual preference. (Page: 13, 14, Line: 335-363)

Discussion:
This is the first time slum dweller is mentioned. If that's an important characteristic of participants, please introduce it earlier.
Response: Thank you for identifying the issue. We apologize for this. It's a typing mistake from our end. (Page: 14, Line: 367)

The discussion is the first time participants' experiences with minor side effects is mentioned. That should be mentioned in the findings if it's important to the discussion.
Response: Thank you for your comments. We have revised it now. (Page: 11, Line: 263, 264)

The sentence "our study revealed that almost all the participants were motivated to get vaccinated based on the perception that it would…" is confusing.
Response: We have revised it now. (Page: 15, Line: 391-393)

We don't know the vaccination status of the participants except they all had either 0 or 1 dose (and if 1 dose, they were supposed to get a second dose). Does this mean that almost all participants had 1 dose? Were there differences between those with no doses and those with 1 dose?
Response: We have added the vaccination status of the participants. No, unfortunately we don't have data about the differences between those with no doses and those with one dose. (Page: 9, Line: 230)

I enjoyed the discussion around collective responsibility and perceived efficacy (that the vaccine will work for them, that the vaccine will work to get things back to normal). You mentioned the 5As framework (and might be worth looking at the 5Cs) in the introduction but then did not explicitly return to it - if you are using that framework, might be worth a paragraph to consider the findings and which "As" applied and which ones did not.
Response: Thank you for your valuable suggestions. We haven revised it now. (Page: 14-17, Line: 365-443)

Reviewer: 1
Competing interests of Reviewer: No competing interests are to be reported

Reviewer: 2
Competing interests of Reviewer: N/A