

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Level of Knowledge, Attitude and Practice towards Diabetes among Nationals and Long-Term Residents of Qatar: A cross-sectional Study
<b>AUTHORS</b>	Al-Mutawaa, Kholoud; Farghaly, Aiman Hussein; Nawaz, Rehana; Loares, Alma; Skaroni, Ioanna; Al Thani, Mohammed; Abou-Samra, Abdul-Badi

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Beshyah, Salem Dubai Medical College for Girls, Medicine
<b>REVIEW RETURNED</b>	09-Jun-2021

<b>GENERAL COMMENTS</b>	<p>The study addressed important questions ie KAP analysis of the public. It identified the link between education and attitudes. Low knowledge and good attitude. They identified the remedy for such problem i.e. education for the public. to improve the knowledge to enable people with good attitude to act correctly.</p> <p>Minor comment:</p> <ol style="list-style-type: none"> <li>1. The limitation of the fairly low age group included needs due discussion. Age is mostly less than 55 years.</li> <li>2. Please avoid using the term "diabetics" and "non-diabetics"</li> </ol>
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<b>REVIEWER</b>	Karimi-Sari, Hamidreza Baqiyatallah University of Medical Sciences
<b>REVIEW RETURNED</b>	23-Jun-2021

<b>GENERAL COMMENTS</b>	<p>Tanks for inviting me to review the manuscript bmjopen-2021-052607 entitled "Level of Knowledge, Attitude and Practice towards Diabetes among Nationals and Long-Term Residents of Qatar". My comments to the authors are as follow.</p> <ul style="list-style-type: none"> <li>- What is the importance of this study for the literature?</li> <li>- This study has some major methodological concerns.</li> <li>- Were the study population selected randomly? Are they representative for general population of Qatar?</li> <li>- Was the study questionnaire valid and reliable? How did you check?</li> <li>- The statistical analysis section is incomplete.</li> <li>- How did you define the cut-off point for low, intermediate, and high levels of KAP?</li> <li>- How much was the response rate? Did all the participants response the questionnaire?</li> <li>- Too many tables and figures! The tables one and three, and also figure one are not necessary.</li> <li>- The discussion and conclusion parts are not deep-enough.</li> </ul>
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<b>REVIEWER</b>	Fatema, Kaniz The University of Iowa, Department of Sociology and Criminology
<b>REVIEW RETURNED</b>	30-Jun-2021

<b>GENERAL COMMENTS</b>	<p><b>Summary</b></p> <p>It is an interesting study to know the level of knowledge, attitude and practice in diabetes-related factors and its relation to selected demographic characteristics of Qatar nationals and long-term residents. However, there are some areas the paper can be improved, which can make the paper clearer and more organized to the readers:</p> <p><b>Introduction:</b></p> <p>(Page-5) <i>“As the incidence of diabetes is increasing worldwide, evaluation of diabetes knowledge, attitude and practice (KAP) has become crucial for guiding behavioural changes of diabetics and individuals at risk.”</i></p> <p><b>To show how diabetes is increasing worldwide, authors can bring up some global statistics of diabetes by providing citations.</b></p> <p>(Page-5) <i>“Adequate information helps the public understands the risks of diabetes and its complications, seeks treatment of existing disease, takes preventive measures, and develops proactive attitude toward health.”</i></p> <p><b>Authors should cite the above statement.</b></p> <p>(Page-6) <i>“The questions encompassed general public’s demographic characteristics, knowledge and attitudes towards diabetes, and lifestyle practices towards diabetes prevention, management and control.”</i></p> <p><b>In terms of the paper’s objective, authors should mention clearly what their research questions were.</b></p> <p><b>Methods:</b></p> <p>(Page-6) <i>“The survey was conducted across the eight municipalities of Qatar specifically in public areas that are frequently visited by residents, including commercial roads, parks, markets, petrol stations and other unrestricted places.”</i></p> <p><b>What are other unrestricted places? It would be great if authors indicate them too.</b></p> <p>(Page-6) <i>“Inclusion criteria for recruitment were Qatar nationals and residents who lived in the country for at least 5 years, both sexes, and at least 18 years old. Excluded from the study were visitors and Qatar expatriates with residency below 5 years.”</i></p> <p><b>Did you select long-term residents based on the years of their residency they received or the total years they lived in Qatar?</b></p>
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	<p>(Page-7) <i>“The questionnaire, developed by Intelligence Qatar (Doha, Qatar) in consultation with the National Diabetes Committee of MoPH, was pilot-tested on 50 randomly selected respondents and validated.”</i></p> <p><b>What is Intelligence Qatar? It would be good if you explain it in a short sentence.</b></p> <p>(Page-7) <i>“KAP questions included general knowledge about diabetes, risk factors, signs and symptoms, complications, preventive measures, and management and control of diabetes.”</i></p> <p><b>For KAP variables, you should indicate what questions you used for each KAP variable. For example, what questions did you select for the knowledge indicator?</b></p> <p>(Page-7) <i>“No patient involved.”</i></p> <p><b>I think authors do not need to mention it under a separate heading; instead, they can describe it inside the methodology part.</b></p> <p><b>Results:</b></p> <p>(Page-8) <i>“Most participants (n=2000; 83%) reported that they did not have any diabetes-related diagnosis, 65 responded they do not know if they were tested for diabetes and 335 participants (14%) reported they had a diabetes-related diagnosis: 99 reported T2D, 74 T1D, 9 pre-diabetes, 90 gestational diabetes and 63 did not know what kind of diabetes diagnosis they had (Table 2).”</i></p> <p><b>As the authors did not mention the complete forms of T2D and T1D in previous sentences, it would be great to write the complete forms instead of the short forms.</b></p> <p>(Page-10) <i>“There was a significant relationship (<math>p&lt;0.001</math>) between knowledge and attitude, knowledge and practice, and attitude and practice (Table 3).”</i></p> <p><b>Although it looks like that there is a significant relationship, it is also noticeable based on the Pearson r-value that there is a weak association. They should also mention this.</b></p> <p>(Page-11) <b>In table 4, authors need to specify which indicators are under knowledge, attitudes, or practice.</b></p> <p>(Page-12) <b>I am not clear about the false/true statement written below in table 4. I think authors need to explain more here.</b></p> <p>(Page-13) <b>Results of the self-reported diabetes diagnosis are only partly visible in table 5. Authors need to work out to make it fully visible.</b></p>
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	<p><b>Discussion:</b></p> <p>(Page-16) <i>“Better knowledge reduces diabetes risk by inducing lifestyle modification and prompting healthy behaviours.”</i></p> <p><b>To prove this statement, authors should have done some regression analysis to see whether people with a higher or lower level of knowledge are likely to utilize healthy behaviors.</b></p> <p>(Page- 16) <i>“The present findings generally showed an intermediate KAP score for attitude and practice but poor in knowledge across participants’ characteristics. This finding highly underscores that awareness is essential for understanding the risk factors and lifestyle choices at population level and is important for the prevention and control of diabetes.”</i></p> <p><b>I am getting confused by this statement. Based on the findings, as far as I have understood, people in Qatar have a good level of attitudes and practices. But if they do not have knowledge about diabetes, then how they can increase their attitudes and practices towards diabetes.</b></p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer 1 Criticism:

1. Reviewer 1 raised the following concerns: “The limitation of the fairly low age group included needs due discussion. Age is mostly less than 55 years.”  
 Authors Response: Thank you for this comment. In fact, the sample size by age was based on the Qatar population structure. This issue was mentioned in Methods page 5 of the manuscript: “..Participants were stratified by age, gender and nationality across all geographic locations in Qatar...”
2. Please avoid using the term "diabetics" and "non-diabetics"  
 Authors response: The terminology was changed to persons with diabetes – Thank you.

Reviewer 2 Criticism:

1. Reviewer 2 raised the following concern: “What is the importance of this study for the literature?”  
 Authors Response: Thank you for this comment. Though a number of literatures suggest a positive role of knowledge, attitude and practice in disease prevention, there is still lack of information of current knowledge, attitude and practice regarding diabetes in Qatar population. This study adds value to diabetes literature through identification of diabetes KAP-related misconceptions among the public and which segments of the community were the targets for awareness campaigns and interventions.

2. This study has some major methodological concerns. Were the study population selected randomly? Are they representative for general population of Qatar? "
 

Authors response: The sample size was based on the population structure of Qatar to ensure representativeness by demographic characteristic. Selection of respondents was at random but only those who consented to the survey were included. Also please see in Methods section: "Participants were stratified by age, gender and nationality across all geographic locations in Qatar to ensure representativeness. Sample size specific to age and geographic location was proportional to size of Qatar's population, while disproportionate sampling was used for gender and nationality to reflect Qatar's population structure."

However, a limitation of the study was due to its recruitment done from public places and did not include those home-bound. Please see page 17: *"The limitation of the study is its recruitment technique from public places which might have resulted in exclusion of home-bound population; thus, does not accurately represent the whole Qatar population."*
3. Was the study questionnaire valid and reliable? How did you check?
 

Authors response: Added see page 6 of Methods: *Content validation of the questionnaire was done by MOPH subject matter experts and reliability test was performed using Cronbach alpha with coefficient of 0.70.*
4. How did you define the cut-off point for low, intermediate, and high levels of KAP?
 

Authors response: Since the study serves as the baseline for future awareness campaign programs, KAP score was classified into three levels with an assumption of 50% as the passing score. Thus, cut-off points for the level of KAP scoring were as follows: 75-100%, 50-74%, or 0-49% for high, intermediate or low; respectively.
5. How much was the response rate? Did all the participants response the questionnaire?
 

Authors response: Response rate was 90%; only those who consented were included.
6. Too many tables and figures! The tables one and three, and also figure one are not necessary. –
 

Authors response: We believe that the tables and figures are necessary to show the actual data and help in understanding the outcome. Without tables and figures it will be hard to follow the discussion and interpretation of the data.
7. The discussion and conclusion parts are not deep-enough.
 

Authors response: These were further expanded on pages 16-17.

Reviewer 3 Criticism:

1. Reviewer 3 requested to "bring some global statistics of diabetes by providing citations"
 

Authors Response: We added statistics from the WHO and IDF. Thank you
2. Reviewer 3 requested to cite the following statement on Page-5 *"Adequate information helps the public understands the risks of diabetes and its complications, seeks treatment of existing disease, takes preventive measures, and develops proactive attitude toward health."*

Authors Response: Citation was added
3. Reviewer 3 requested to clearly state the paper's objective and research questions.
 

Author response: The general objective is clearly stated in page 5 *i.e to gauge public's knowledge, attitude and practice towards diabetes in relation to the diabetes awareness campaign; the number of words are limited to enumerate the questions.*
4. Reviewer 3 requested to clarify what was "other places that were not restricted"

Author response: Any public place that is accessible and public crowd is allowed in it.

5. Reviewer 3 requested to clarify the 5 year residency inclusion criteria for the survey whether it was based on official documentation or based on actual years lived in Qatar.

Authors response: *Based on the actual years they lived in Qatar.*

6. Reviewer 3 requested to clarify “*What is Intelligence Qatar? It would be good if you explain it in a short sentence*”.

Authors response: *Intelligence Qatar - IQ is a market research agency based in Doha, Qatar*

7. Reviewer 3 requested to indicate what questions you used for each KAP variable. For example, what questions did you select for the knowledge indicator?

*Authors response:* For knowledge, respondents were asked about types of diabetes, normal fasting blood glucose, the recommended daily exercise, and other diabetes-related information such as risk factors, signs and symptoms, complications, preventive measures, and management and control of diabetes. For attitude, respondents were asked of their agreement on 11-item behaviors toward diabetes in a scale of 1-5, where 1 is strongly disagree and 5 is strongly agree. Practice questions pertain to consultations with health professionals about diabetes-related issues, diabetes screening and the respondents’ practices to prevent or manage diabetes.

8. Reviewer 3 recommended to delete the statement “No patient involved.” From Page 7 and describe it inside the methodology part.

*Authors response:* The statement was incorporated in the methods of this revision.

9. The reviewer requested to spell out T1D and T2D on Page 8, as they appear for the first time in the text.

Authors response: Thank you – done as suggested.

10. The reviewer suggested to mention the “weak association” described in Page 10: “*There was a significant relationship ( $p < 0.001$ ) between knowledge and attitude, knowledge and practice, and attitude and practice (Table 3). Although it looks like that there is a significant relationship, it is also noticeable based on the Pearson  $r$ -value that there is a weak association. They should also mention this.* –

Authors response: Thank you, this is added in the interpretation

11. In table 4, page 11, authors need to specify which indicators are under knowledge, attitudes, or practice.

Authors response: Table 4 contains all knowledge items; Subtitle modified.

12. The author requested to clarify the false/true statement written below in table 4.

Authors response: false/true statement is now explained in page 10. “Diabetes can be cured” and “Insulin is used for T1D only” are false statements while “Type 2 diabetes can be prevented” is a true statement.

13. (Page-13) Results of the self-reported diabetes diagnosis are only partly visible in table 5. Authors need to work out to make it fully visible.

Authors response: Thank you, Table 5 has been reformatted in landscape to allow better visibility

of its contents.

14. (Page-16) “Better knowledge reduces diabetes risk by inducing lifestyle modification and prompting healthy behaviours.” To prove this statement, authors should have done some regression analysis to see whether people with a higher or lower level of knowledge are likely to utilize healthy behaviors.

Authors response: Regression cannot be done because the variables considered were categorical. However, to address the reviewer’s concern we have rephrased the statement on page 16 as follows: *“The significant associations between knowledge, attitude and practices towards diabetes in this study agree with other studies (17, 30, 31). It suggests that a better knowledge is likely to result in better attitude and/or practices towards diabetes prevention.”*

15. (Page- 16) “The present findings generally showed an intermediate KAP score for attitude and practice but poor in knowledge across participants’ characteristics. This finding highly underscores that awareness is essential for understanding the risk factors and lifestyle choices at population level and is important for the prevention and control of diabetes.” The reviewer questions how to interpret the finding that the people in Qatar have a good level of attitudes and practices without having good knowledge about diabetes.....

Authors response: We agree that the above statement might appear confusing. However, it is also well known that knowledge shapes attitude and practice. The survey revealed that in Qatar that the score of diabetes knowledge was poor but that of attitude and practice were intermediate. We have edited the statement referred by the referee as follows: *“The better KAP score for attitude and practice may be ascribed to the health promotion activities initiated by the different health sectors in the country, which contribute to improving the public’s attitude and practices towards healthy living. Qatar has developed its own dietary guidelines advocating good eating habits and physical activity through various initiatives (32). Likewise, physical activity is encouraged at all age groups (33) and a lot of activities on tobacco control are implemented in all sectors (34). These initiatives are working on the risk factors such as diet, physical activity and smoking, in which residents and citizens actively participate in; however, respondents may not be aware that these activities are directly impacting diabetes.”*

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Fatema, Kaniz The University of Iowa, Department of Sociology and Criminology
<b>REVIEW RETURNED</b>	31-Oct-2021

<b>GENERAL COMMENTS</b>	I am satisfied with their revised version.
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