PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Does the Patient-Reported Apnea Questionnaire (PRAQ) increase patient-centeredness in the daily practice of sleep centers? A mixed-methods study.
AUTHORS	Abma, Inger; Rovers, Maroeska; IJff, Marijke; Hol, Bernard; Nägele, Masha; Westert, Gert; Van der Wees, Philip

VERSION 1 - REVIEW

REVIEWER	Amy Rogers University of Dundee, UK
REVIEW RETURNED	05-Sep-2018

GENERAL COMMENTS	Thank you for inviting me to review this report of an evaluation of the implementation of a PROM in a clinical setting. Abstract This study is described as a pilot study but there is no indication of what this pilot is intended for. Is it assessing the feasibility for a proposed larger study? If not, it would be better not to use the term “pilot” and to refer to it as an exploratory study. One of the stated hypotheses is to test if the PROM empowers patients. It is not clear from the result section of the abstract if this was achieved. Introduction The question of how to increase patient empowerment in clinical care is an interesting one and PROMs would seem to have the potential to make a difference here. I would have appreciated greater discussion of how a PROM might affect change in empowerment and how this change may be measurable (if at all). Methods Survey - As this study used a specifically designed survey, it would be useful to include this as an appendix as well as descriptions of if/how it has been tested/validated. More detail on statistical methods would be appreciated. You state that data were analyzed “per item” using non-parametric methods. Does this mean that you used conducted multiple comparisons using Mann-Whitney? Did you adjust your significant p-value to control for error caused by multiple comparisons. Patient records - please briefly mention the statistical methods used for this data too. Results Interviews - In addition to the narrative explanation, a table/box might be a good way to present the range of codes generated in analysing in the interview data. By largely focussing on frequently

	identified codes you may be missing some less commonly held but equally valid perceptions about PRAQ. Survey - In table 1 you indicate that there was a statistically significant difference between the pre and post-implementation groups in severity of symptoms at follow-up consultation. As this is essentially a baseline characteristic it does not seem appropriate to test for statistical difference (again, the risk of type 1 error is inflated by multiple comparisons). Simply reporting the percentage is sufficient to allow the reader to observe how similar the two groups were. Table 2 - I suspect that the statistically significant finding here may also be a result of type 1 error caused by multiple comparisons and/or because of small numbers. There are a number of cells in the table containing very small numbers. It may be more informative to report the results of Likert items as frequency, mode and median. Patient record - Table 4 - no need for the "If nothing is indicated …" Table 5 - is there a missing "AHI<15" in the heading of the post-implementation (n=42) column? Again, with such small numbers, raw numbers would be useful in addition to percentage. Discussion You refer to PRAQ having "limited success" in uptake. Were there any pre-specified targets for uptake? If so, who were they set by? The points about PRAQ duplicating features that are already present in the consultation is a good one, but, as mentioned above, I do wonder if conflicting ideas of what the PRAQ is for is responsible for the apparent ineffectiveness and lack of engagement by staff. Are there any plans to feedback to the staff what the patients felt the tool was useful for? The qualitative analysis raised a very interesting point about how patients perceive the purpose of the PRAQ. The contrast between patients and practitioners here seems to be important and might be worth exploring further in the discussion.

REVIEWER	Charles Bae University of Pennsylvania, USA
REVIEW RETURNED	19-Nov-2018

GENERAL COMMENTS	Article summary – bullet 3. Should studies be centers? What is patient centeredness of care? Same as patient-centered care? In the Methods section, there is no section about statistical analysis, and the primary and secondary outcomes are not clearly described. They are listed undifferentiated in the abstract. It would be helpful to list the PRAQ questions and domains in a table, and have a sample PRAQ-report as a supplement. Methods Section 2.4 – How long were the in-depth semi structured interviews? How many interviewers were there, and if there was more than one interviewer, was a standard set of questions asked to all interviewees?

	The group that was interviewed seems to be very heterogeneous - 27 people (seems like none of the people interviewed after the 1st visit were interviewed after a follow up visit, and vice versa – can the authors confirm? And why not interview the same person before the 1st and 2nd visits?) - 18 were interviewed after the 1st intake visit - 9 were interviewed after the follow up visit - 4 were with partner or child - 22 patients saw the PRAQ-report at home and/or during the consultation – how did they see the PRAQ-report at home? And how soon before the visit did they see the PRAQ-report? Please provide more details. - 5 did the PRAQ and did not see a report – why not? It was confusing to determine how many coders there were, and who coded what. Was there one coder who looked at all of the interviewers to determine inter-rater reliability? Methods Section 2.5 – Need to be clearer about the completion time of the PRAQ. Seems like participants got the PRAQ up to 2 months before the visit, but was the time of completion relative to the scheduled visit collected? There could be some bias introduced depending on when the PRAQ was completed – 2 months before (a lot of things can happen that can affect quality of life), or the night before the visit. Were there instructions as to when the patient should complete the PRAQ? However, this timeline is not consistent with the timeline detailed in supplement 1, where email invitations were sent to a patient to complete the PRAQ at 10 and 3 days before the consult. This is much better and consistent. Also, based on this workflow it is not clear why PRAQ complete was not good for follow ups – the authors stated that “Use of the PRAQ during follow-up consultations could not be fully evaluated, because a limited number of patients had completed the PRAQ at follow-up at the time of the interviews. This was due to practical implementation issues in combination with the relatively short duration of the pilot.” In Methods section 2.3, it seems that this was piloted in 3 centers for 6 successive months. How did this affect completion of PRAQ at follow-up visits since an invitation is sent via email 10 days and 3 days before an appointment? Does the limited number of completed PRAQs at follow-up represent a limitation - that patients do not want to complete the PRAQ? Why didn’t the control group get the additional questions? It would have been interesting to see how they answered the questions compared to the study group. Was the PRAQ only done electronically? Did some patients complete the PRAQ on paper? Methods Section 2.6 – How many patient records were included from the one sleep center? In the Results section 3.3, the authors list 125 patients were included in the pre-implementation group, and 124 in the post-implementation group. And was compliance data collected for all patients from the 3 sleep centers? Or just the one center? Results section, Section 3.3 Table 1- What is MRA? What are the other treatments?

	Table 3 – would be helpful to add a column or section about what percentage of providers reviewed the PRAQ report. Table 6 – How can there be compliance data for the pre-implementation of PRAQ group if this was the group of patients who were being seen for an initial visit after a sleep study was completed? Presumably they would not be treated yet.

REVIEWER	Maria R Bonsignore University of Palermo, Italy
REVIEW RETURNED	20-Dec-2018

GENERAL COMMENTS	This paper describes the results of application of the patient-reported apnea questionnaire (PRAQ), developed and tested to improve patient-centeredness of care. On the patient side, results vere positive, but health care professionals were quite reluctant to use this instrument as they considered it of limited usefulness. PRAQ may be more useful during OSA treatment, to assess longitudinal changes. The authors also hope to implement its use with the new Dutch guidelines for OSA, which are more patient-centered than previous ones. Comments This area of research is not my usual one, but I think all efforts should be done to improve patients' perception of their problems. I read the paper with interest, but I found it too long. My main suggestion is to shorten it and make it more concise, avoiding useless repetitions and too many details. Readers have little time nowadays, and a too long descriptive paper may be a good reason to quit reading. If possible, these parts of the paper should be in supplementary material. Although the questionnaire is described, it would be nice to see it in the appendix. More importantly, do the authors plan to make changes to it, in order to try to implement its clinical use? The proposed change to sleep study-visit sequence to visit -sleep study is interestin,g and could improve the interaction between patient and health professionals especially for patient centerdness of care. This is an important point, with expected high variability according to the context. Following my previous question, should the PRAQ be adjusted to such a change? Do you think the applicability of PRAQ could be extended to the family physicians?

REVIEWER	Benedikt Hofauer Department of Otorhinolaryngology / Head and Neck Surgery, Klinikum rechts der Isar, Technical University Munich, Germany Reimbursement of travel costs to conferences from Inspire Medical Systems, Consultant for Galvani Bioelectronics
REVIEW RETURNED	10-Feb-2019

GENERAL COMMENTS	Dear editor, Dear authors, Thank you for giving me the opportunity to review this manuscript on the question if the Patient-Reported Apnea Questionnaire (PRAQ) increases patient-centeredness in the daily practice of sleep centres. The study topic is on a relevant issue and evaluated with a big effort. The abstract is well structured and contains the

	relevant information. In my opinion, there are some modification which might increase the quality of the manuscript. 1. The methods section is too long and needs to be shortened, which I understand might be difficult in a qualitative study. I think a tabular illustration of some applied methods might actually help. 2. Please check if the results section could be tightened as well and more focus on the original aim of the study. 3. Some things should be added to the discussion: - Patients usually need to fill out many questionnaires in the outpatient sleep clinic. Could you imagine a group of patients, who could benefit from the application of the PRAQ to enable a more targeted application? - What is the difference of advantage of the PRAQ compared to other already established questionnaires (such as ESS, FOSQ, PSQI)? - How long does it take for the patients to answer the PRAQ? 4. As I understand the PRAQ is not illustrated in the manuscript as it was published before and only a citation is mentioned. Maybe some more information in the methods section (without increasing the word count there) might be useful to facilitate the readability.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Amy Rogers

Institution and Country: University of Dundee, UK

Abstract

This study is described as a pilot study but there is no indication of what this pilot is intended for. Is it assessing the feasibility for a proposed larger study? If not, it would be better not to use the term “pilot” and to refer to it as an exploratory study.

>> We agree with the reviewer and have now referred to the study as an exploratory study throughout the manuscript.

One of the stated hypotheses is to test if the PROM empowers patients. It is not clear from the result section of the abstract if this was achieved.

>> We have chosen to remove the term patient empowerment from the paper (see the comment below this one) and have replaced our statement in the objectives and the results: The hypotheses were tested that this patient-reported outcome measure (PROM) makes patients more aware of which health complaints they experience that may be related to apnea. We now briefly mention that patients felt more informed in the results section of the abstract. Due to word limit we had to remove some other information from the abstract.

Introduction

The question of how to increase patient empowerment in clinical care is an interesting one and PROMs would seem to have the potential to make a difference here. I would have appreciated

greater discussion of how a PROM might affect change in empowerment and how this change may be measurable (if at all).

>> We agree that this is an interesting topic. However, we used the term “patient empowerment” in this study to capture in two words what we expected the PRAQ might do: prepare patients better for their consultations so that hopefully they can communicate their problems better with their doctor. This was therefore more of a practical choice than a theoretical one. Since we do understand that patient empowerment is a broad term about which a lot can be said, and perhaps should be said if the term is used, we have chosen to remove it from the manuscript. In this way we stay closer to what we wanted to say about how the PRAQ may in some way empower patients, without comprehensively addressing it as we do not feel this is the essence of our study.

Methods

Survey - As this study used a specifically designed survey, it would be useful to include this as an appendix as well as descriptions of if/how it has been tested/validated.

>> The survey was studied for comprehensibility by the members of the research team, including a patient, but was not tested due to time constraints. We have added this information to the methods and discussion.

More detail on statistical methods would be appreciated. You state that data were analyzed “per item” using non-parametric methods. Does this mean that you used conducted multiple comparisons using Mann-Whitney? Did you adjust your significant p-value to control for error caused by multiple comparisons. Patient records - please briefly mention the statistical methods used for this data too.

>> We want to thank the reviewer for making this point. We have added a paragraph (2.7) on the statistical analysis for the patient survey and the patient record data.

We consulted a statistician, who advised us not to correct for multiple testing because this is an exploratory study – however, that does mean that p-values below the significance threshold should be taken only as an indication that the PRAQ may have had an impact on this issue, which may (or may not) be relevant. We have added this information to the new paragraph 2.7.

Results

Interviews - In addition to the narrative explanation, a table/box might be a good way to present the range of codes generated in analysing in the interview data. By largely focussing on frequently identified codes you may be missing some less commonly held but equally valid perceptions about PRAQ.

>> We understand the point the reviewer makes, however after considering this we have come to the conclusion publishing our code books cannot fix this issue. A code is for example “professional-patient communication”, and only when describing this code would it become clear which different ways of discussing the PRAQ there are. There are different “stories” under a code, so to say. Only publishing such a code does therefore not give much additional information. Not being able to tell all the stories under all the codes, due to a word limit, is a common issue in qualitative research, but we do believe that we have been able to report the most important information for our research question in this manuscript (especially now that we have added some extra information based on another comment of this reviewer below).

Survey - In table 1 you indicate that there was a statistically significant difference between the pre and post-implementation groups in severity of symptoms at follow-up consultation. As this is essentially a baseline characteristic it does not seem appropriate to test for statistical difference (again, the risk of type 1 error is inflated by multiple comparisons). Simply reporting the percentage is sufficient to allow the reader to observe how similar the two groups were.

>> We have removed the information about the statistical significance of the difference in the severity of symptoms from table 1. We have also removed the information on this from the discussion section.

Table 2 - I suspect that the statistically significant finding here may also be a result of type 1 error caused by multiple comparisons and/or because of small numbers.

>> We agree, and have adapted the discussion section to reflect how this is an exploratory study and this finding may not be relevant.

“This being an exploratory study, statistically significant results should be interpreted with caution, and we deem the relevance of this finding to be limited.”

There are a number of cells in table 2 containing very small numbers. It may be more informative to report the results of Likert items as frequency, mode and median.

>> We have added the frequency and median to the table (now table 4). We looked at the mode, but chose not to add it because it cluttered the table and it was often the same as the median. Therefore it did not add a lot of new information, especially since the frequency is now also visible. We chose to also keep the percentages in the table (in addition to frequency), because otherwise it would become difficult to compare the results pre- and post-implementation, due to different numbers of total surveys.

For clarity, we have also added to the revised table the number of times that an item was missing or a patient indicated that the item was not applicable to them. In this way, the N adds up to the same total number of completed surveys for each section.

Patient record - Table 4 - no need for the “If nothing is indicated …”

>> we have removed this, as suggested

Table 5 - is there a missing “AHI<15” in the heading of the post-implementation (n=42) column?

>> the reviewer is correct, we have added this

Again, with such small numbers, raw numbers would be useful in addition to percentage.

>> we have added the N to each of the percentages.

Discussion

You refer to PRAQ having “limited success” in uptake. Were there any pre-specified targets for uptake? If so, who were they set by?

>> As this was an exploratory study, we did not set and pre-specified targets but rather let the results from the interviews help us define whether the PRAQ was a success or not.

The points about PRAQ duplicating features that are already present in the consultation is a good one, but, as mentioned above, I do wonder if conflicting ideas of what the PRAQ is for is responsible for the apparent ineffectiveness and lack of engagement by staff. Are there any plans to feedback to the staff what the patients felt the tool was useful for?

>> After the study, a session was held in each of the participating sleep centers to feed back the results of the study, including the patient perspective. None of the centers saw this as a reason to continue using the PRAQ in their clinical practice. This was also due to practical issues, such as the PRAQ not being available from the electronic health record, which outweighed any potential interest in continuing with the PRAQ.

The qualitative analysis raised a very interesting point about how patients perceive the purpose of the PRAQ. The contrast between patients and practitioners here seems to be important and might be worth exploring further in the discussion.

>> We definitely agree this is interesting and have now added a new sentence to the results, as well as to the discussion, that may help understand this difference better.

Results: What may have played a role here is that patients seemed eager to hear their sleep study results, rather than (first) spend much time talking about their symptoms or problems.

Discussion: “Whereas some patients seemed to be more interested in hearing their sleep study results than talk about their symptoms, for the healthcare professionals hearing about the patient’s symptoms in their own words is an essential part of the diagnosis.”

Reviewer: 2

Reviewer Name: Charles Bae

Institution and Country: University of Pennsylvania, USA

Article summary – bullet 3. Should studies be centers?

>> This is correct, we thank the reviewer for spotting this

What is patient centeredness of care? Same as patient-centered care?

>> Yes, patient centeredness of care is the degree to which care is patient-centered.

In the Methods section, there is no section about statistical analysis, and the primary and secondary outcomes are not clearly described. They are listed undifferentiated in the abstract.

>> We have added a paragraph on the statistical analysis (2.7), as suggested. We did not select primary and secondary outcome measures as this was an exploratory pilot study, and we did not set out to prove that the PRAQ does or doesn't work, but rather find indications of how it might work and on which variables it may have an effect. We have removed the mention of "primary and secondary outcome measures" from the abstract.

It would be helpful to list the PRAQ questions and domains in a table, and have a sample PRAQ-report as a supplement.

>> We have added both the PRAQ and the PRAQ-report as supplementary file (file 1 and 2).

Methods Section 2.4 – How long were the in-depth semi structured interviews? How many interviewers were there, and if there was more than one interviewer, was a standard set of questions asked to all interviewees? It was confusing to determine how many coders there were, and who coded what. Was there one coder who looked at all of the interviewers to determine inter-rater reliability?

>> The first 5 manuscripts were coded independently by the two main coders. After a coding session with a larger research group to come to agreement on the codes, one of the main coders coded the rest of the interviews. All of these interviews were then read and checked by the other main coder, and the two coders reached consensus.

We have added this information to the manuscript, but because other reviewers requested a shorter methods section, the whole paragraph on coding (including this extra information) was moved to supplementary file 3. There, we also added information about the average length of the interviews (44 minutes for the healthcare providers, and 15 minutes for the patients (as we promised we would not keep them long)), and the number of interviewers (n=2). These interviewers both used the interview guide that is mentioned in the manuscript and therefore asked the same standard set of questions.

The group that was interviewed seems to be very heterogeneous

- 27 people (seems like none of the people interviewed after the 1st visit were interviewed after a follow up visit, and vice versa – can the authors confirm? And why not interview the same person before the 1st and 2nd visits?)

>> Interviews only took place in the last 2 months of the study (information which we have now added to methods section 2.4), meaning that planning-wise it was not feasible to include patients twice. However, we do not believe that we have missed important information by interviewing different patients rather than the same patients twice.

- 22 patients saw the PRAQ-report at home and/or during the consultation – how did they see the PRAQ-report at home? And how soon before the visit did they see the PRAQ-report? Please provide more details.

>> This is described in Supplementary File 1. After completion of the PRAQ patients have the option of accessing the PRAQ-report from the online platform.

- 5 did the PRAQ and did not see a report – why not?

>> Because they did not look at the PRAQ-report before the consultation on the online platform (which was optional), and the PRAQ was not shown during the consultation by the healthcare professional. We have now added this explanation below table 1.

Methods Section 2.5 – Need to be clearer about the completion time of the PRAQ. Seems like participants got the PRAQ up to 2 months before the visit, but was the time of completion relative to the scheduled visit collected? There could be some bias introduced depending on when the PRAQ was completed – 2 months before (a lot of things can happen that can affect quality of life), or the night before the visit. Were there instructions as to when the patient should complete the PRAQ?

However, this timeline is not consistent with the timeline detailed in supplement 1, where email invitations were sent to a patient to complete the PRAQ at 10 and 3 days before the consult. This is much better and consistent.

>> The PRAQ (the intervention) was distributed to patients at 10 days before the patients' consultation, with a reminder 3 days before the consultation, during the six months of the study.

The patient survey (a method of measuring whether the intervention was useful) was distributed to patients attending consultations in the two months before implementation of the PRAQ (control group), and in the last two months of the study (intervention group). Patients completed these surveys right after their consultation, where they were handed the survey on paper by the healthcare professional and could then complete them in the waiting room and deposit them in a box.

Also, based on this workflow it is not clear why PRAQ complete was not good for follow ups – the authors stated that "Use of the PRAQ during follow-up consultations could not be fully evaluated, because a limited number of patients had completed the PRAQ at follow-up at the time of the interviews. This was due to practical implementation issues in combination with the relatively short duration of the pilot." In Methods section 2.3, it seems that this was piloted in 3 centers for 6 successive months. How did this affect completion of PRAQ at follow-up visits since an invitation is sent via email 10 days and 3 days before an appointment?

>> The method of distribution of the PRAQ to intake and follow-up patients is described in section 2.3. The centers distributed the PRAQ to patients attending a follow-up consultation, only if they also had also already completed the PRAQ at their intake session. So the earliest PRAQs for follow-up consultations could only take place 8-10 weeks after starting to distribute the PRAQ for intake consultations (2 weeks before start treatment, 6-8 weeks to try out the treatment before the follow-up consultation). Since it took a few weeks to properly get the intake-PRAQs going, and some more time to properly get the follow-up PRAQs going, this was in practice even later.

Furthermore, healthcare professionals did not always think to check whether a patient had a follow-up PRAQ (as also mentioned in the discussion section). Because the follow-up PRAQs only started coming in quite late, it was not always clear to them when they should start checking – and some forgot altogether. It was also not necessarily clear for which patients they had to check, since not all follow-up patients were included in the study. Clearly, if the PRAQ is to be used in the future outside

of study setting, a more feasible way of distributing the PRAQ needs to be found, preferably connected to consultations scheduled in the electronic health record.

Does the limited number of completed PRAQs at follow-up represent a limitation - that patients do not want to complete the PRAQ?

>> It is possible that, in addition to the issues mentioned above, patients are not as interested in completing follow-up PRAQs - especially if they feel much better. We did hear this in some patient interviews, though other patients told us they did find it interesting to see how their PRAQ scores changed since the treatment. We think that the way (or whether) the PRAQ is addressed in the intake consultation will also impact the willingness to complete a follow-up PRAQ. Considering the barriers experienced in this study, we do not believe we can make any clear statements about how willing patients are to complete a follow-up PRAQ. To keep the manuscript relatively brief, we decided to not discuss this further in the manuscript.

Why didn't the control group get the additional questions? It would have been interesting to see how they answered the questions compared to the study group.

>> We are not entirely sure which "additional questions" the reviewer is referring to. Possibly the reviewer is referring to the survey statements that were posed to the patients in the post-implementation group, but not the pre-implementation group. These are statements about the usefulness of the PRAQ before and during the consultation. Since the pre-implementation group did not complete a PRAQ and had no idea what it was, it would not have been possible to get sensible responses to these statements from the control group patients.

Was the PRAQ only done electronically? Did some patients complete the PRAQ on paper?

>> The PRAQ could only be completed electronically, so that a PRAQ-report could be generated. In the validation study of the PRAQ, only a very small number of patients was not able to complete a questionnaire online, which is why this method was considered feasible.

Methods Section 2.6 – How many patient records were included from the one sleep center? In the Results section 3.3, the authors list 125 patients were included in the pre-implementation group, and 124 in the post-implementation group.

>> Yes, 125 patients were included in the pre-implementation group, and 124 in the post-implementation group. We have not mentioned this in methods section, as for quantitative data it is common to include this only in the results section.

And was compliance data collected for all patients from the 3 sleep centers? Or just the one center?

>> Compliance with treatment was one of the variables in the patient records that we studied, as described in paragraph 2.6. It was therefore only collected for the one sleep center in which we did the patient record study.

Results section, Section 3.3

Table 1- What is MRA? What are the other treatments?

>> We have added an explanation of the used abbreviations below the table, and added explanations of the MRA and other treatments below the table:

MRA = mandibular repositioning device, device worn over the teeth that pushes tongue and jaw forward to hold the airway open

Other possible treatments are surgery of the jaw or throat, and methods that will help a patient with positional OSA (who experiences breathing stops mainly when they lie on their backs) sleep on their side

Table 3 – would be helpful to add a column or section about what percentage of providers reviewed the PRAQ report.

>> We have added a table to the manuscript showing the requested information (table 2), and adjusted the description of the results to incorporate this information and refer to the table.

Table 6 – How can there be compliance data for the pre-implementation of PRAQ group if this was the group of patients who were being seen for an initial visit after a sleep study was completed? Presumably they would not be treated yet.

>> Apologies for the confusion - we have now added “compliance with treatment at the first follow-up consultation” in the methods section (section 2.6). In other words, the patients were included if their intake consultation was in the specified time period, but their compliance data was taken from the information collected during their first follow-up consultation (8-10 weeks later). This goes for both the control group (pre-implementation of the PRAQ) and the intervention group (post-implementation of the PRAQ).

Reviewer: 3

Reviewer Name: Maria R Bonsignore

Institution and Country: University of Palermo, Italy

Comments

This area of research is not my usual one, but I think all efforts should be done to improve patients' perception of their problems. I read the paper with interest, but I found it too long. My main suggestion is to shorten it and make it more concise, avoiding useless repetitions and too many details. Readers have little time nowadays, and a too long descriptive paper may be a good reason to quit reading. If possible, these parts of the paper should be in supplementary material.

>> We have put part of the methods section 2.4 (about the interviews) in an supplementary file 3, and another part in a new table (table 1). This should have helped streamline the methods section. We also looked at the rest of the manuscript again, and even though we agree it is on the longer side, this

is due to the many different methods we have used. We believe that current text truly describes only the core of the study – what is needed to understand the qualitative and qualitative parts of the study.

Although the questionnaire is described, it would be nice to see it in the appendix.

>> We have added the questions of the PRAQ in an appendix, as suggested.

More importantly, do the authors plan to make changes to it, in order to try to implement its clinical use?

>> We have added a paragraph to the discussion in which we discuss how the PRAQ and the context and which it is used could be adapted to fit healthcare professionals' preferences, also highlighting potential downsides to these adaptations. Our conclusion is that it is up to the sleep centers how they want to use the PRAQ (or whether they want to omit certain domains from the PRAQ), based on what is desirable to them.

The proposed change to sleep study-visit sequence to visit -sleep study is interesting and could improve the interaction between patient and health professionals especially for patient centeredness of care. This is an important point, with expected high variability according to the context. Following my previous question, should the PRAQ be adjusted to such a change? Do you think the applicability of PRAQ could be extended to the family physicians?

>> This is an interesting suggestion. We believe that GPs are most likely not that interested in distributing an OSA-specific quality of life PROM because it is only relevant for a few patients. A good screening questionnaire is likely more useful for them with regard to referrals to sleep centers. GPs are (in Dutch care) also not explicitly involved in the follow-up of OSA care. Since we did not study the possibility of the use of the PRAQ by GPs in this study, we therefore we do not know how useful it is to add these considerations to the discussion without underlying data from our study. We hope that the reviewer agrees with our decision not to add it to the manuscript.

Reviewer: 4

Reviewer Name: Benedikt Hofauer

Institution and Country: Department of Otorhinolaryngology / Head and Neck Surgery, Klinikum rechts der Isar, Technical University Munich, Germany

Dear editor,

Dear authors,

Thank you for giving me the opportunity to review this manuscript on the question if the Patient-Reported Apnea Questionnaire (PRAQ) increases patient-centeredness in the daily practice of sleep centres. The study topic is on a relevant issue and evaluated with a big effort. The abstract is well structured and contains the relevant information. In my opinion, there are some modification which might increase the quality of the manuscript.

1. The methods section is too long and needs to be shortened, which I understand might be difficult in a qualitative study. I think a tabular illustration of some applied methods might actually help.

>> Thank you for this suggestion, we have added a table which allowed us to remove a section of text in the methods section. We also moved another paragraph of the methods section to supplementary file 3.

2. Please check if the results section could be tightened as well and more focus on the original aim of the study.

>> Reading this comment made us realise that we maybe have not phrased the aim of our study well enough. A problem of many studies into PROMs in clinical practice is that it only describes that the PROM does or does not work, without exploring why. This makes it hard for future initiatives to learn from the conducted studies. The way the PRAQ was received and interpreted by both patients and healthcare professionals is essential for understanding which impact it did or did not have on patient empowerment and patient-centeredness, which is why we believe keeping this information in the manuscript is important. We have added a few words to our aim in order to address this.

Considering this expanded aim, we do not believe that any of the information in the results section is superfluous.

3. Some things should be added to the discussion:

- Patients usually need to fill out many questionnaires in the outpatient sleep clinic. Could you imagine a group of patients, who could benefit from the application of the PRAQ to enable a more targeted application?

>> We have added a paragraph to the discussion in which we discuss how the PRAQ and the context and which it is used could be adapted to fit healthcare professionals' preferences, also highlighting potential downsides to these adaptations. Our conclusion is that it is up to the sleep centers how they want to use the PRAQ (for example by targeting specific patients), based on what is desirable to them.

- What is the difference of advantage of the PRAQ compared to other already established questionnaires (such as ESS, FOSQ, PSQI)?

The advantage is in the nature of the PRAQ and what it measures (and why and how we developed it), and we therefore thought it would be a better fit to add this information to the introduction rather than the discussion.

"The advantage of the PRAQ compared to other commonly used PROMs in the care for patients with OSA (such as the Epworth Sleepiness Scale (ESS), Functional Outcomes of Sleep Questionnaire (FOSQ), etc) is that it provides a comprehensive overview of the possibly impacted aspects of quality of life that patients with OSA may experience. It is therefore potentially suitable for shifting the focus of care away from (only) medical problems towards the problems patients experience in their daily life."

- How long does it take for the patients to answer the PRAQ?

>> We agree that it would be good to add this information to the manuscript. The time it takes to complete the PRAQ has been described in previous research, we have therefore added this information to the methods section. We have also added the opinion of patients on the time it takes to complete the PRAQ to the results section, as this was an interview question. Since the approximately 15 minutes it takes to complete the PRAQ was not considered a problem by patients, and since we are trying to not further add to the word count, we would prefer to not further discuss this in the discussion section.

4. As I understand the PRAQ is not illustrated in the manuscript as it was published before and only a citation is mentioned. Maybe some more information in the methods section (without increasing the word count there) might be useful to facilitate the readability.

>> The domains of the PRAQ were described in the supplementary material, but for clarity we have now added both the full PRAQ and the PRAQ-report in the supplementary material (1 and 2) as well.

VERSION 2 – REVIEW

REVIEWER	Dr Amy Rogers University of Dundee UK
REVIEW RETURNED	19-Mar-2019

GENERAL COMMENTS	Thank you for addressing my comments comprehensively. I am satisfied with the changes that you have made.

REVIEWER	Benedikt Hofauer Otorhinolaryngology / Head and Neck Surgery Klinikum rechts der Isar Technical University Munich, Germany
REVIEW RETURNED	02-Apr-2019

GENERAL COMMENTS	Dear Sir or Madam, Thank you for your thorough revision of the manuscript. In my opinion, it is ready for publication. Kind regards, Benedikt Hofauer