Author's response to reviews

**Title:** Monitoring Health Related Quality of Life in paediatric practice: an innovative web-based application

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**Author's response to reviews:** see over
Dear Dr Norton,

Thank you very much for the opportunity to revise our manuscript for possible publication in *BMC Pediatrics*. After thoughtful editing of the manuscript with valuable advice of the reviewers, the manuscript addresses the comments of the reviewers.

We submitted the article as “technical advances” and not as a research article. Therefore, we decided to delete preliminary data, we now only describe the research outline. We have chosen to describe the design, methods, results and conclusions of the KLIK study in detail in another article being prepared. As a result, the focus of this technical advance is more clear and we will mainly focus on presenting the web-based application for reporting HRQOL data prior to clinic visits.

We want to emphasize this, because it seems that especially the second reviewer considered our manuscript as a research submission. Many of the comments were valuable, but not relevant in the context of our technical manuscript.

Online we submitted a revised manuscript including track changes and the letter to the reviewers. All our reactions to the reviewers are depicted in gray. We appreciate the very useful and comprehensive recommendations for improving the manuscript and hope that we have addressed these recommendations satisfactorily.

Sincerely yours, also on behalf of all other co-authors,

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Revisions regarding:
MS: 3948037804056153
“Monitoring health related quality of life in paediatric practice: Development of an innovative web-based application”

Lotte Haverman, Vivian Engelen, Marion A J Van Rossum, Hugo S A Heymans and Martha A Grootenhuis

Reviewer 1

Reviewer’s report
This paper describes an approach to implement quality of life assessment into the clinical routine of four special clinics for juvenile arthritis via a web-based program that support the communication between physicians and patients. It is a good example for an innovative application of modern E-health technology, dedicated to the improvement of the patients’ quality of life. The authors report some preliminary results regarding the feasibility and acceptance of their method by patients and physicians. In general, this is a well written paper which is of interest for clinicians who are interested in practical applications of quality of life measurement. However, the paper might be improved by clarification of some details of this practice model and by adding data on the practicability, such as required time for assessment, interpretation and discussion of the results in clinical practice. Based on the few data presented in this paper I would stay more cautious in recommending this method for clinical practice with different patient groups. First, a more thorough evaluation is needed, especially regarding the usefulness of individual QoL diagnosis on a quantitative level.

In detail, I would suggest to reconsider the following aspects:
1. In the introduction, the constructs PROs, HRQoL, and patient satisfaction are mixed. PRO is a very generic term comprising a lot of different variables that might be reported by patients, such as symptoms, well-being, functioning, adverse effects of treatments, satisfaction with different aspects of the treatment and with the course of the disease, etc. The authors should clearly state which major outcomes they focused on. It seems that they concentrated on repeated assessment of HRQoL. Moreover, the authors refer repeatedly to psychosocial issues of chronic diseases. The link between HRQoL and psychosocial adaptation should be clarified, especially as the authors state that QoL assessment is not appropriate to identify maladapted patients.

- We agree with the reviewer that this part should be more specified. The KLIK application focuses on the repeated measurement of HRQOL of children with a chronic disease (JIA), and as described in the discussion we will extend the website
with the use of the SDQ to screen for psychosocial problems. The introduction should indeed be described more consequently. Therefore, the following changes are made:

- "The use of Patient Reported Outcomes (PROs) in daily clinical practice receives increasing attention. PROs include the self-assessment of functional status, symptoms or other concerns such as patient needs and satisfaction with care. Health Related Quality of Life (HRQOL) questionnaires are commonly used in clinical trials to collect information about a specific group of patients. These questionnaires retrieve information directly from the patient and are therefore a form of PROs”
- And: “Especially in paediatrics, there is a need to address HRQOL in daily clinical practice. In the context of a child’s development, repeated measurement of HRQOL in different developmental stages can be valuable. With the use of PROs, HRQOL problems can be detected early and tailored intervention can be provided to the child, before the HRQOL problems increase.”

2. The use of the terms “effective” and “efficiency” is confusing and inconsistent, e.g., p 3 line7, p 4 line7, p 6 line 12. Please clarify, how repeated assessment of HRQoL might be effective in which direction?
   - We think that the repeated assessment of HRQOL is more effective when the conditions are optimal. Therefore, we based the use of our PROfile on the five conclusions of Greenhalgh et al. We consider it is possible to achieve significant differences between a control and intervention group on satisfaction with the doctor’s visit, advice, referrals and discussed HRQOL topics. Besides, we think that the use of the internet makes it more easy and practical to represent HRQOL data to the paediatrician compared to paper and pencil version or stand-alone computers. To be more consistent we changed the following text in the manuscript:
     - “In this article, we provide a detailed description of this process, the development of the website and a training program for paediatricians to improve effectiveness of the use of PROs about HRQOL in paediatric practice and to make the use of HRQOL data more efficient”.

3. I do not understand the sentence “In the developmental context PROs can be valuable.” (p 3). Please explain!
   - We agree with the reviewer that this should be explained more explicitly, therefore the following text is added to the manuscript:
     - “In the context of a child’s development, repeated measurement of HRQOL in different developmental stages can be valuable. With the use of PROs
about HRQOL, HRQOL problems can be detected early and a tailored intervention can be provided to the child, before the HRQOL problems increase.”

4. If the authors assume that children have more difficulties to express themselves verbally than adults, why should it be an advantage to administer them verbally bound questionnaires? (p 3)

- For children, compared to adults, it is difficult to respond to open questionnaires, because they have to produce an answer actively. In the KLIK study, we use age appropriate questionnaires with multiple choice answering, which can help children to find their words to express their cognitions, feelings and problems. During the doctor’s visit the paediatrician can help the child to express his/her feelings by initiating the conversation with the use of the child’s answers on the PROs.

5. The training program for paediatricians seems an interesting idea. However, more information about the training would be valuable, especially about the duration of training, contents and objectives, and standards of interpreting individual QoL data.

- The authors agree with the lack of information noted by the reviewers. Therefore, we added detailed information about the training for paediatricians:
  
  “Training

To improve of the use of PROs in clinical practice we invested in a training program for the paediatricians to interpret and use the provided PROfile. The training was given by a researcher and a psychologist. The duration of the training was 90 minutes and consisted of a short theoretical part and an extensive practical part. For the practical part, we used DVD material containing three short patient cases (duration: +/- 5 minutes), representing real doctor’s visits and actual PROfiles. Before the demonstration of each case the KLIK PROfile was discussed (“How would you interpret and discuss this PROfile?”) and the paediatricians received different assignments concerning each case. All cases had a specific learning goal, respectively; general use of KLIK PROfile, use of line graphs and use of decision tree. After the demonstration of the cases, the skills of the paediatrician on the DVD were evaluated. The paediatricians received key messages (reminders) about the use of the KLIK PROfile (fig.3).

After the training, the paediatricians received a pocket card, presenting a decision tree, an example of the KLIK PROfile and the reminders. We developed this decision tree in collaboration with paediatric psychologists with the aim to support the communication about the PROfile [12]. The pocket card is also available on the website”. 
I would doubt that a normative approach referring to healthy peers is appropriate in counselling children with chronic diseases - this would obviously focus on the deficits due to the disease and treatment burden. Moreover, disease specific QoL measures which are recommended for pediatric populations cannot be compared to healthy children.

- The authors also considered this topic, but in our opinion the PedsQl seemed to be the most appropriate questionnaire to use in clinical practice, because it is a short and clear questionnaire to monitor HRQOL. It takes up to 5 minutes to complete the questionnaire. We added the following text to make our considerations more clear:
  - “For children aged 0 - 4 years the TNO-AZL Preschool children Quality of Life (Tapqol) was used [20]. For children from 6 - 18 years the Pediatric Quality of Life Scale (PedsQL) was applied [21]. Psychometric properties of both questionnaires are satisfying [14, 19, 22] and both questionnaires have a short completion time (5 - 10 minutes). The PedsQL appears to be the most appropriate HRQOL questionnaire because of its broad age range (6-18 years) and the availability of self-report as well as proxy-report. In addition, Young et al [13] establish validity and reliability of the PedsQl online format for children with chronic health conditions.”
- Besides, the PedsQl is suitable for paediatric populations. However, we do agree that a comparison to more similar peers would be desirable. Therefore, in time we will add the collected HRQOL data of children with JIA to the website. We will then provide a comparison with healthy peers and other children with JIA. We described this in at the discussion section:
  - The KLIK PROfile can be applied in all types of specialised and dedicated paediatric clinics. In addition, we assume that the PROfile can include both a generic part (such as the PedsQL) and a disease specific questionnaire if available. The HRQOL scores can be compared to healthy norm scores or even to population-specific scores when enough data are available.”

6. In general, the readers of the paper would be interested to learn about possible consequences of individual QoL results. Maybe case examples would be helpful to illustrate the usefulness and the evidence base of individual QoL diagnosis. What does an individual QoL score tell us about the child with a chronic condition?

- We thank the reviewer for this suggestion. We added two short case samples. The following text is added to the manuscript:
  - Case 1
  Mary is a 11-year old girl diagnosed with polyarticular juvenile idiopathic arthritis. At her first visit at the paediatric outpatient clinic, she had severe arthritis of several joints and was unable to go to school. She started with anti-inflammatory
treatment and slowly her joints improved. Mary frequently visited the outpatient clinic and got acquainted with her treating pediatric rheumatologist. Before the last two visits, she completed the HRQOL questionnaires online at home. Her PROfile was mainly green at the physical items, but Mary reported to have problems with friends (social functioning) and to feel anxious and angry sometimes (emotional functioning). During the doctor’s visit her profile was discussed and her problems were addressed. Mary explained that she experienced lack of understanding from her friends and that made her angry. In addition, she is afraid of what will happen to her in the future. The pediatric rheumatologist gave her advice to give a presentation for her classmates about her disease and explained to Mary again the course of her disease. The pediatrician discussed with Mary and her mother that next visits she will address these topics again and when she does not feel any better referral to the psychosocial department might be an option. At the end of this visit, Mary told her treating pediatric rheumatologist that she was relieved with the answers and advice. She said she wished that she could use the KLIK PROfile every visit, because in this way it was much easier for her to talk to her doctor.

Case 2
Aaron is a 14 year old boy diagnosed with systemic onset juvenile idiopathic arthritis (SoJIA). For nearly a year he was treated for SoJIA and he achieved complete remission. His medication consisted of daily subcutaneous injections which he injected himself without ever complaining. Therefore, the treating pediatric rheumatologist did not expect Aaron to have HRQOL problems or problems with his treatment. The first time he used the questionnaire all the items on his PROfile were green, except for one. He indicated that he had huge problems with his medication much to the surprise of the pediatrician. While discussing this Aaron explained that he was used to take his medication on exact times in the early morning, however during summer holiday he liked to sleep late in the morning and did not want to get up early. Since he was so dutifully he would put his alarm early in the morning to take his medication and never slept late. His adherence never caused any problem during regular schooldays, so the pediatrician would probably never have asked him specifically about the timing of his medication. Aaron would never have discussed this issue himself without the use of the PROfile, but knowing this problem it was easy for the pediatrician to solve this by explaining and educating him that he could take his medicine on an exact time a few hours later during his summer holiday.
7. The response rate of 73% is encouraging and indicates a good acceptance. Anyway, reasons for refusals in the remaining patients should be reported.

- We would first like to give a general reaction to the comments of the reviewer on the part of the first results of the KLIK study. The authors agree with the reviewer about the limited information given regarding the interpretation and discussion of the results and this point was emphasized by the other reviewer as well. The main goal of our article was to present and introduce a new web-based application to monitor and discuss HRQOL issues in daily clinical pediatric practice. We prefer to present a total overview of the outcome data in a separate paper after solid analyses. Therefore, we have deleted the preliminary results, because we can imagine this cause confusion with the reader. However, we will clarify more of the details of the study design, because we think our study provides a thorough evaluation of the KLIK application.

- Because we deleted the part of the first results of the KLIK study, we also deleted the information about the response rate.

8. More information is needed, how the individual results were discussed with the patients. What was considered a “HRQoL problem”? It is unclear why only 6 patients of the intervention group received the extended discussion (p 8). What was the time frame for patient counselling, and how were parents involved?

- We considered a red answer on one of the items of the PedsOl questionnaire as a HRQOL problem. A child or parent reports to have “often” or “almost always” problems with that topic.

- Maybe, the reviewer is confused; in the KLIK study 6 paediatricians participated and 121 children participated. All children in the intervention period received a discussion about their PROfile.

- We added the following text to describe the study design more detailed:

  o “Study design and outcome measures of the KLIK study
Children and adolescents with Juvenile Idiopathic Arthritis (JIA) can experience problems in daily functioning, which may lead to a decreased HRQOL [17-19]. The KLIK study was launched in August 2008 to evaluate the use of the KLIK PROfile in daily clinical practice. All patients (0 to 18 years) under treatment in one of the four paediatric rheumatology centres in Amsterdam were eligible for the KLIK study. To avoid contamination we chose to use a sequential cohort design. Children and parents were allocated to the control group or intervention group depending on the date of the doctor’s visit. The control group (n = 79) was counselled between February 2009 - April 2009 and the intervention group (n = 121) between May 2009 and February 2010. The rheumatologists (n = 6) participated in both groups. Before doctor’s visit, the child or parents (when the child is younger than 8
years old) completes a HRQOL questionnaire at home by the use of the KLIK website. For children aged 0 - 4 years the TNO-AZL Preschool children Quality of Life (Tapqol) was used [20]. For children from 6 - 18 years the Pediatric Quality of Life Scale (PedsQL) was applied [21]. Psychometric properties of both questionnaires are satisfying [14, 19, 22] and both questionnaires have a short completion time ( 5 - 10 minutes). The PedsQL appears to be the most appropriate HRQOL questionnaire because of its broad age range (6-18 years) and the availability of self-report as well as proxy-report. In addition, Young et al [13] establish validity and reliability of the PedsQl online format for children with chronic health conditions.

In the control group the KLIK PROfile was not provided to the paediatrician. In the intervention group, the PROfile was provided and discussed by the paediatrician during the visit with the focus on monitoring and discussing the HRQOL problems. Shortly after their visit the child, the parents and the paediatrician, completed a questionnaire, again using the website, about the topics discussed, referrals, advice, satisfaction with the doctor’s visit and, in the intervention period, with an evaluation of the PROfile. The study was approved by the Medical Ethics Committee of all participating centres. The outcome measures applied in the KLIK study were satisfaction with the doctor’s visit, advice, referrals and discussed topics. The outcomes of the intervention group will be compared to the control group. The collected data will be analysed and will be published in 2011.”

9. The normative approach of interpreting QoL data is also questionable because norms based on paper-pencil applications of questionnaire may not be valid for computer-administered versions of the same questionnaires. There are studies demonstrating response differences by method of administration.

- The authors agree with the reviewer, however Young et al (2009) established validity and reliability of the PedsQl online format for children with chronic health conditions. In addition, in this study 8-13-year-old children with chronic health conditions provided the same health information online when compared to information provided on paper. This is in line with the findings of Raat et al. who performed a comparable study using the Child Health Questionnaire (2007) and the International study of Asthma and Allergies in Childhood questionnaire (2007) among 13-17-year-old youth. Based on this literature, we think it is possible to generalize these scores and compare them to the norm of the paper-pencil norm scores.
10. The time required for assessment, interpretation and discussion of the results during the clinical visits should be reported, based on empirical findings. In the discussion the authors mention that in other studies no additional time effort was needed, but it remains unclear how much time was invested by the clinicians in the current KLIK project, in addition to standard care.

- *We will discuss this specific part in our following research article about the effectiveness of the KLIK application.*

11. The discussion should try to disentangle the effects of implementing the web-based tool from general effects of a physicians’ training in communication skills. It might be that improved communication alone is responsible for the high satisfaction of patients and physicians.

- *We want to thank the author for this valuable comment. The paediatricians received the training before the start of the intervention period. This training is part of the intervention and therefore intentionally influences the communication at the doctor’s visit. We consider discussing this more detailed in our research article about the effectiveness. We have information of doctor’s visits available from the intervention period where the PROfile (due to different circumstances) was not used. We could explore if there are differences in the intervention group between the doctor’s visit with and without the use of the PROfile regarding communication.*

12. As the authors compared an intervention group and a control group, data comparing both groups in terms of satisfaction should be available. So far, it remains unclear why the authors used a control group design.

- *Yes, we will compare both groups on satisfaction with care and all our other outcome measures, but we will as stated above present this result in a separate paper.*

**Minor comment**

13. There is an inconsistent capitalization of words in the title.

- *We have changed the title*

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:
I declare that I have no competing interests.
Reviewer 2

Reviewer's report:

General Comments

This manuscript provides detail of a web-based application that allows child patients and parent carers to report health-related quality of life data prior to clinic visits. The manuscript provides detail of the design and use of the web-based application and provides some data on patient/parent and paediatrician satisfaction with the system. Much of the manuscript is devoted to describing the web-based application, and this is presented in clear detail. Due to the detailed description of the general system the focus of the manuscript is somewhat lost. It is appreciated that the authors wish to present detail of the new system, but they also aim to present preliminary system-user satisfaction data. As such, the aims described in the background are not specific to the results that are presented. The methods described are not specific to the methods used to collect the data that are reported. The only data to be reported is the satisfaction of patients and paediatricians who used the application, however, very little data is presented, and what is presented is lacking any detail. The general topic of the manuscript is interesting and timely. I believe that details of the system will be of interest to a wide audience and that it is important that the acceptability of the system to children, patients, and paediatricians is reported and evaluated. In its current state, the manuscript fails to make a clear statement. The aim of the manuscript is not clear, and the methods and results of the study are confused. As such, I would recommend that the balance of the manuscript is rectified to ensure that the presentation and discussion of the results of patient/parent and physician satisfaction with the system are the main focus of the manuscript. To this end, I have provided detailed point-by-point comments below. Comments that are deemed to be Major Compulsory Revisions are grouped first, followed by those which are Minor Essential Revisions and Discretionary Revisions.

First of all the authors would like to thank the reviewer for the thorough comments and advice on our manuscript. The authors think the reviewer mentions a very important subject. The focus of the manuscript should be clear and the balance should be rectified. Initially, we submitted this manuscript as “technical advances” instead of a research article. We tried to introduce the KLIK application regarding the instructions on the BMC website. Because this was not clear enough we made some important adjustments to the manuscript; in the revised manuscript we focus on the presentation and introduction of a new web-based application to monitor and discuss HRQOL issues in daily clinical paediatric practice. We prefer to present a total overview of the outcome data in a separate paper after solid analyses. We think it is important to describe and introduce the web-based application, because
(compare to adult health care) little is known about the feedback of PROs in daily clinical paediatric practice and we convinced that this application is innovative in paediatric care.

**Major Compulsory Revisions:**

**Background**

1. Generally the background is clear and informative. This section, however, needs to incorporate much of the information that is currently presented in the methods section. As such, the information that is currently presented could potentially be reduced in length.

   - The authors agree with the reviewer that in regular research articles much of the information presented in the methods section should be in the background section. However we tried to introduce the KLIK application regarding the instructions on the BMC website. Therefore, we presented the description of the development of the web-based application in the method section.

2. The aims stated at the end of the background are not specific to the results that are presented in the current paper. The aims need to be clarified and made specific to the outcome of the current study, i.e., patient, parent, and paediatrician satisfaction with the system.

   - The authors agree with the reviewer, the aims are made more specific and only based on our main goal; presenting the web-based application. The following aims are formulated:

     o “The aim of the current article is to describe the development and introduction of a new web-based application for use of PROs in daily paediatric clinical practice. Based on our experiences in paediatric oncology [9] we combined 1) the need to address HRQOL issues, 2) the increased attention for PROs in clinical paediatrics and 3) the use of internet in health care. In recent years, we focused on the development of a new web-based application. “In this article, we provide a detailed description of this process, the development of the website and a training program for paediatricians to improve effectiveness of the use of PROs about HRQOL in paediatric practice and to make the use of HRQOL data more efficient”

**Methods**

I do not agree that the majority of the material presented in this section belongs here. The focus of the methods section should be on the study that is currently presented. This should be limited to methods of administration, such as how patients, parents, and paediatricians use the system, and details of the satisfaction assessment and how these are scored.
3. The first 3 paragraphs (up to ‘use of the website’) do not describe the methods for the current study and should be presented in the background.
4. The ‘use of the website’ section is relevant to the current study and can be retained in the methods section.
5. Whilst the section on training is interesting it is not directly relevant to the results that are presented in this manuscript, and again, this belongs to the background section.
6. The section on ‘Privacy’ has relevance to the current study and can be retained in the methods section.
7. The section on ‘Implementation’ is not relevant to the current study and should be presented in the background.

Results

Much of the information in the results section is not related to the results of the current study. In addition, much of the detail provided in this section refers to the methods of the study and so this information should be completed as recommended below and moved to the methods section of the manuscript.

8. Page 7, Lines 6-13 in the first paragraph under the results heading (‘All patients’ to ‘intervention group (n=63)’). This section is confusing as it does not clearly represent the number of people taking part in the current study. It is debateable whether this information belongs to the methods or results, and this primarily an issue over reporting style. However, this section needs clarifying by stating the number of children, parents, and paediatricians that participated in reporting their satisfaction of using the system. Please clarify how many clinic visits each participant took part in - it is assumed that patients and parents reported on one visit and that paediatricians reported on every visit involving a study participant.

We do agree with the reviewer that this part should be described in more detail. The following text is added to the manuscript:

“Study design and outcome measures of the KLIK study

Children and adolescents with Juvenile Idiopathic Arthritis (JIA) can experience problems in daily functioning, which may lead to a decreased HRQOL [17-19]. The KLIK study was launched in August 2008 to evaluate the use of the KLIK PROfile in daily clinical practice. All patients (0 to 18 years) under treatment in one of the four paediatric rheumatology centres in Amsterdam were eligible for the KLIK
study. To avoid contamination we chose to use a sequential cohort design. Children and parents were allocated to the control group or intervention group depending on the date of the doctor’s visit. The control group (n = 79) was counselled between February 2009 - April 2009 and the intervention group (n = 121) between May 2009 and February 2010. The rheumatologists (n = 6) participated in both groups. Before doctor’s visit, the child or parents (when the child is younger than 8 years old) completes a HRQOL questionnaire at home by the use of the KLIK website. For children aged 0 - 4 years the TNO-AZL Preschool children Quality of Life (Tapqol) was used [20]. For children from 6 - 18 years the Pediatric Quality of Life Scale (PedsQL) was applied [21]. Psychometric properties of both questionnaires are satisfying [14, 19, 22] and both questionnaires have a short completion time (5 - 10 minutes). The PedsQL appears to be the most appropriate HRQOL questionnaire because of its broad age range (6-18 years) and the availability of self-report as well as proxy-report. In addition, Young et al [13] establish validity and reliability of the PedsQl online format for children with chronic health conditions. In the control group the KLIK PROfile was not provided to the paediatrician. In the intervention group, the PROfile was provided and discussed by the paediatrician during the visit with the focus on monitoring and discussing the HRQOL problems. Shortly after their visit the child, the parents and the paediatrician, completed a questionnaire, again using the website, about the topics discussed, referrals, advice, satisfaction with the doctor’s visit and, in the intervention period, with an evaluation of the PROfile. The study was approved by the Medical Ethics Committee of all participating centres. The outcome measures applied in the KLIK study were satisfaction with the doctor’s visit, advice, referrals and discussed topics. The outcomes of the intervention group will be compared to the control group. The collected data will be analysed and will be published in 2011.”

9. Page 8, lines 6-9 (‘Before doctor’s visit...’ to ‘was applied [21]’). Please state number of children belonging to each age group and number/proportion of parents/children who completed the satisfaction questions.

- We added the following text to the manuscript on the number of children in each group:
  - “(The control group (n = 79) was counselled between February 2009 - April 2009 and the intervention group (n = 121) between May 2009 and February 2010). We will discuss this part in more detail in our following research article.”
10. Page 8, lines 11-15. Please clarify times scale for reporting satisfaction, providing mean and range of days post clinic visit that satisfaction data were reported.

- This comment is very useful for our research article. We have registered the time of completing the satisfaction questionnaire and will describe this in our other article.

11. Page 8, lines 11-15. This section alludes to multiple survey questions being asked, but it is not clear what responses are reported as results. Does the current manuscript only report the evaluation of PROfile, or does it include the satisfaction with the doctor’s visit and other question as well? This section needs expansion and more detail.

- This comment is again very useful for our research article and in that article we will describe our results in more detail. Our intention was to present and introduce a new web-based application to monitor and discuss HRQOL issues in daily clinical pediatric practice in this technical article. We did not intent to report all results of the satisfaction questionnaires and other questionnaires and the results of the comparison between the control and intervention group. To make this clear we now deleted all preliminary results.

12. Page 8, lines 11-15. Please clarify whether the survey questions were different for parents and children, and whether the satisfaction surveys were different for children of different ages. Please state the number and type of questions that were asked for each respondent group and state the response options that were available for each question.

13. Page 8, lines 11-15. Please state how each satisfaction question or measure was scored and analysed.

14. Page 8 lines 16-21. As stated above, it is not clear how many satisfaction questions were asked, what the questions were relating to, or how these were scored. This makes commenting on the results reported a little difficult. Suggestions of data that should be reported are given below, and it is possible that this data can be best summarised in a table:

a. Please state the proportion of satisfaction questionnaires that were reported by parents Vs children for each age group. Provide mean and variability of responses for each question or measure for children and parents. Indicate the distribution of responses for questions that were not responded to as ‘useful’.

b. Please state the number of satisfaction questionnaires completed by each paediatrician (it is alluded to that the paediatricians completed these after every visit, therefore it is assumed that there are multiple satisfaction reports for the paediatricians). Did all paediatricians respond to all questions for all visits ‘useful’ or were there variations by doctors, visits, and questions? Please give mean and variability of responses for each question for paediatricians as a group, and if relevant for individuals.
We would like to give a general reaction to the comments of the reviewer on this part of the comments. These comments are all about the satisfaction questionnaire. We will prepare an article about the KLIK study with a detailed description of the questionnaires used, the method and the results.

Discussion
15. The discussion should focus on reviewing the results presented. Whilst it seems that most patients, parents, and paediatricians felt that the system was useful, it is important to report and examine ‘non-useful’ responses as these may give some insight into any problems that the users may have had with the application and how the system could be improved for the future. Please discuss the range of responses to the questions.

Based on the main goal of this manuscript (describing and introducing the new KLIK application) we will not discuss any results. We deleted this section out of the manuscript.

16. Page 9, lines 8-10. Please give the number/proportion of patients in your clinic who have not been able to use the KLIK system due to lack of internet access and the number/proportion of patients who chose to use the internet access point at the outpatient department rather than at home. This information may be placed in methods/results if preferred.

We will discuss this part in a research article about the effectiveness of the KLIK application.

Minor Essential Revisions
Abstract
17. The presentation of results needs clarifying; please state the number of paediatricians, patients and parents taking part in the study and their individual (mean group) ratings of the system.

We will discuss this part in a research article about the effectiveness of the KLIK application. We changed the abstract based on the focus of this technical advanced article:

“Background
Health Related Quality of Life (HRQOL) questionnaires are increasingly used in clinical practice. These Patient Reported Outcomes (PROs) are provided to the paediatrician to facilitate communication with patients during a doctor’s visit. The aim of the current article is to describe the development and introduction of a new web-based application for use of PROs in daily paediatric clinical practice.”
Methods
Currently, using PROs in daily clinical practice is very time consuming and often has logistical problems. The use of a web-based program can overcome these problems and contributes to an improved use of PROs in clinical practice. We therefore developed an easy accessible website (KLIK) for outpatient treatment and a training for paediatricians to maximize the effectiveness and the practical the use of PROs (KLIK PROfile).

Evaluation of the KLIK application
The KLIK study was launched in August 2008 to evaluate the use of the KLIK PROfile in daily clinical practice. The KLIK study evaluates if the feedback of HRQOL data could influence satisfaction with the doctor’s visit, given advice, type of referrals and discussed topics. In this multicentre study, a control group (without the use of the KLIK PROfile is compared to an intervention group (with the use of the KLIK PROfile). A sequential cohort design is chosen to avoid contamination between the study groups.

Conclusions
Based on our acquired experience during the KLIK study we conclude that the use of the KLIK PROfile is an efficient way to systematic monitor and discuss HRQOL issues during the doctor’s visit. Next steps will be a comprehensive evaluation of the KLIK study data and to implement the KLIK PROfile in daily clinical practice in different patient groups.”

Background
18. On page 3, lines 13-15, the comments on ceiling effects and randomization need references.

The authors may consider the following references:


The authors thank the reviewer for this rightly comment and useful references. We added the references to the manuscript.

• We also added an extra reference about contamination: Snyder, C & Aaronson Use of Patient-reported outcomes in clinical practice. Lancet 2009; 374:396-70.

• We added this text to the manuscript in the KLIK design part, to explain why randomisation is not desirable in this study:
  “To avoid contamination we chose to use a sequential cohort design, Randomisation was not desirable, because paediatricians received a training to use the KLIK PROfile and with this information gained it would not be possible to stay unbiased for the paediatrician. Randomisation of centres would be biased as well; the influence of the different care systems in the different centres would be too big.”

Results

19. The first 6 lines (‘children and adolescents’ to ‘advice and referrals.’) are not results. The first 3 lines belong to the Background section; the next 3 lines belong to Methods.

• We totally change this part of the manuscript; see point “results” and “8”.

20. Page 8 lines 11-15. In this section, please clarify whether parents or children or parents and children completed the satisfaction surveys

• In the part of the evaluation of the KLIK application we described that both parents and children (when older than 8) completed the satisfaction questionnaires:
  * “Shortly after their visit the child, the parents and the paediatrician, completed a questionnaire, again using the website…..”

Discussion

21. Please include limitations of the research. Please include acknowledgement that the study includes a relatively small sample size due to the preliminary nature of the work.

• We will discuss limitations of the research in our research article. But we can imagine the main focus of the discussion of this manuscript was not totally clear. Therefore we changed the following part of discussion section of the manuscript:
  “Only the results of the KLIK study can determine whether the online KLIK application has been effective, but we can describe our first experiences with the KLIK application and make recommendations for future practice.”
Discretionary Revisions

Discussion

22. Page 9, line 1. The use of the word ‘profound’ is peculiar, with connotations to philosophical or theoretical research. Do the authors mean ‘in depth’, ‘thorough’, or ‘ground breaking’?
• We thank the reviewer for this comment. We changed ‘profound’ into ‘comprehensive’.

23. Page 9, lines 4-14. This section is very interesting, with implications for other researchers across Europe. Please provide figures for the proportion of homes in the Netherlands who are reported to have internet access (referenced).
• The authors thank the review for this valuable comment. We added the reference and change this part into the following text:
“In the context of using PROs in clinical practice some issues should be considered. The use of internet seems to be an efficient way to monitor HRQOL. However, the Netherlands has the highest rate of internet access in Europe. In 2009, 90% of all Dutch households had internet access. Our experience with the KLIK study confirmed this.”

24. Page 10, lines 19-22. This section raises an important issue about evaluating the experiences of parents. It would be nice if the authors could reflect on the results of the parent-reported satisfaction of the web-application and comment on how the web-application and clinic visits could be improved to support parents.
• The authors agree with the reviewers. This is interesting to look at when we are writing our research article. We do not have the data on satisfaction yet. At this moment, it is therefore not possible to use the results to improve the application for parents.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I can confirm that I have no competing interests in relation to the paper that I have reviewed.