Author’s response to reviews

Title: Barriers and facilitators for the management of vertigo: a qualitative study with primary care providers

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Dear Editors,

We would like to take this opportunity to thank you and the reviewers for reviewing our manuscript “Barriers and facilitators for the management of vertigo: a qualitative study with primary care providers.”

The comments and suggestions were extremely helpful. Please find enclosed a point-to-point reply addressing all comments. We highlighted all changes made to the manuscript following the reviewers’ comments in yellow.

We are looking forward to hearing from you!

Yours sincerely,

Anna-Janina Stephan & Eva Kovacs

Answers to the Editor
Editor's comment: The introduction in particular needs careful and thorough revisions.

Thank you for considering our manuscript for publication. The reviewers’ comments were extremely helpful. We completely revised the introduction section and incorporated all reviewer comments into the manuscript. For details, please see below.

Answers to Reviewer 1

Reviewer #1:

Major comments

1. The introduction really needs some strengthening to demonstrate that this is an area of importance. Currently there is not enough explanation about vertigo as a condition, what is involved in management (by patients and healthcare systems), what the implications are if it's not managed well. There is not enough of an argument that HCP don't follow guidelines or find them challenging to follow in vertigo care at the moment. More evidence that this is a real problem worth addressing is needed. It's not enough to say that in other fields PCPs have problems with implementing guidelines. There needs to be a discussion of the current literature in this area (especially as it is later referred to in the discussion). This should make it clearer why this research is necessary, who it may be useful for and what this research adds, which at the moment isn't obvious.

Thank you for your valuable comments and suggestions. We completely restructured the introduction, starting with a description of conditions entailing vertigo and its relation with treatment options:

“Vertigo and dizziness are symptoms which are encountered frequently in primary care. The etiology of vertigo and dizziness is often multifactorial. Peripheral and central vestibular diseases are the most obvious and frequent causes; however, vertigo and dizziness can also be provoked by cardiovascular diseases, by polyneuropathy, or by medication, or they can have a psychosomatic origin [1]. The appropriate choice of treatment, e.g. liberatory maneuvers of misplaced otoliths, physiotherapy, prescription of medications, adjustment of medication regimes, or cognitive behavioural therapy, depends largely on the correct identification of the underlying condition [2].” (page 4, lines 3-10).

We also amended the sentence about implications if vertigo is not managed well:

“The PCP decides about the patient’s path through the health care system, e.g. to initiate diagnostic procedures and treatment, or to refer the patient to the appropriate specialist [4]. Without a targeted and correct first PCP assessment, patients are being sent off in the wrong direction from the very beginning of the diagnostic process, which may result in redundant or unnecessary procedures and medication intake. Vertigo and dizziness play a predominant role among health conditions that are frequently underdiagnosed [1]. There is sound evidence that
diagnostic and therapeutic needs of patients with vestibular disease are often unmet [2], leading to chronification and the development of secondary, functional symptoms [5]. As 45% of vertigo and dizziness patients’ first contacts with the health care system occur on the primary care level [6], the PCPs’ expertise is of utmost importance.” (page 4, line 15 to page 5, line 2).

The argument that PCPs do not follow guidelines or find them challenging to follow in vertigo care was supported as follows:

“There is evidence that an accurate and specific diagnosis could have been assigned to up to 86% of vertiginous patients who had previously received a diagnosis of “unspecific dizziness” by their primary and secondary care physicians [1].” (page 4, lines 12-15).

We further extended the section explaining why this research is necessary, who it may be useful for and what this research adds:

“In Germany and internationally, several specialist-driven evidence-based guidelines have been published [7-11], but only recently, the German College of General Practitioners and Family Physicians introduced the first German guideline for the management of vertigo specifically targeting primary care [12]. This presents a unique chance for action, since appropriate support measures accompanying guideline introduction have the potential to increase guideline use and effectiveness [13], for example through identifying and addressing barriers of adequate disease management. Nevertheless, little is known about the primary care providers’ (PCPs’) perspectives, needs and attitudes specifically regarding vertigo management and the support they would need for successful vertigo guideline implementation.” (page 5, lines 3-12).

2. Page 5 line 12- The use of five theories seems a little excessive.

We apologize for the misleading phrasing. The main theoretical foundation of this article is the implementation theory of Capability, Opportunity, and Motivation for Behaviour change (COM-B), filled with constructs and operationalizations (suggestions for question phrasing) from the Theoretical Domains Framework (TDF) and Consolidated Framework for Implementation Research (CFIR).

We chose COM-B because it not only summarizes the pre-requisites (capability, opportunity, motivation) of enacting a certain behaviour but also suggests specific intervention strategies to enhance each of these pre-requisites. The focus of an implementation theory is to provide an understanding of crucial aspects of intervention implementation. COM-B does not provide specific constructs, though, to measure capability, opportunity and motivation.

These constructs are provided by so-called determinant frameworks (such as TDF and CFIR). TDF, for example, names specific aspects which can be summarized under the COM-B dimension “capability” such as “knowledge”, “skills”, “memory, attention and decision processes” or “behavioural regulation”. We first focused on TDF because our target intervention will be focussing on behaviour change. Afterwards, constructs from CFIR, which take into
account interactions between individuals and their environment, were added. For a detailed description of the process, please see the new paragraphs which we are presenting below.

AGREE II and the EPOC list were used for the development of a pre-defined coding structure for analysis, because they provide comprehensive lists of possible intervention methods and quality criteria for guidelines, respectively, and offer a good starting point for coding. EPOC was additionally used for prompts during the interviews, if necessary, because it ensured that we were not missing out on opinions regarding important intervention methods.

The methods section of the manuscript was adapted accordingly. For the specific changes there, please see our replies to your following comments.

More detail is needed to explain why the interview topic guide was based on these particular theories, linking it back to the research objectives.

We re-organised the respective part of the methods section accordingly:

“Basing intervention development on theory allows the researcher to understand which critical points an intervention needs to address and, after implementation, to identify why or why not an intervention worked in a specific context or setting [14]. We organized both the interview structure and the coding frame for content analysis alongside the implementation theory [15] of Capability, Opportunity, and Motivation for Behaviour change (COM-B) [16]. We chose this implementation theory because on the one hand it summarizes the pre-requisites of enacting a certain behaviour: Capability, opportunity, and motivation. Capability (“C”) describes the psychological (intellectual) ability and the physical (practical) skills to enact a certain behaviour. Opportunity (“O”) is defined as the perceived influences of the social and physical environment which may enable or hinder a certain behaviour. Motivation (“M”) describes the processes which activate or inhibit a certain behaviour. On the other hand, the COM-B theory also suggests specific intervention strategies to enhance each of these pre-requisites. For example, if missing capabilities were found to be a major barrier for vertigo guideline implementation, COM-B would suggest an intervention mainly focussing on training or enablement, which properly addresses these barriers [16].” (page 6, lines 6-21).

Also, we adapted the methods section of the abstract accordingly:

“A theory-based interview structure was developed based on the implementation theory of capability, opportunity and motivation for behaviour change (COM-B) using questions based on constructs from the Theoretical Domains Framework (TDF) and the Consolidated Framework for Implementation Research (CFIR).” (page 2, lines 11-14).

It is unclear at present what exactly it is the authors are trying to find out. The authors need to make clear the justification for the use of all of these, and much more needs to be provided in way of describing the 'synthesis of constructs'(Page 5 line 13). The authors use the TDF to focus on the 'role of individual characteristics', and the CFIR to focus on 'the role of intervention characteristics and context in behaviour change'. However, one of the central constructs of the
CFIR is 'Characteristics of the individual' which include: knowledge and beliefs, self-efficacy, individual stage of change, identification with organizational and personal attributes'. A better justification of the need to use both theories is needed, as is an explicit justification for why a third model (COM-B) has been employed?

For the reasons why we chose the COM-B model, please see the new paragraph above. Additionally, we added the following sentences to explain how CFIR and TDF were used and why, in our opinion, it was necessary and appropriate to use them both:

“Since the COM-B does not provide specific constructs which could be readily operationalized into interview questions, we used constructs from the determinant framework [15] Theoretical Domains Framework (TDF) [17]. TDF is one of the two most frequently used theories for the subject of guideline implementation [18]. We chose it because our target intervention will be focussing on behaviour change. The TDF is a summary of constructs of behavioural change theories which offers the possibility to be further combined and extended with other frameworks [19], e.g. with the Consolidated Framework for Implementation Research (CFIR) [20]. Because behavior does not only depend on the individual, but is also influenced by the context, such as the setting and the characteristics of the intervention that one tries to implement [21], we followed previous studies [22, 23] and completed the list of relevant constructs from the TDF with constructs from the CFIR regarding intervention characteristics, characteristics of the implementation process and characteristics of the environmental context. With regard to the characteristics of individuals, TDF and CFIR partly overlap. For example, TDF lists “beliefs about capabilities” and CFIR lists “self-efficacy”. In these cases, we kept only one of the two constructs in our list. In the next step, for each construct, an interview question was formulated, e.g. “How easy or difficult do you find it to manage vertigo patients? Why?” Last, all questions were reviewed for their relevance with regard to our research objectives and the interview structure was shortened considerable in order to keep the interviews within a maximum length of 30 minutes.” (page 6, line 22 to page 7, line 18).

Also the abstract it states that the AGREE II framework is used - I can't see any mention of this in the text.

Our apologies for having been confusing in this point. The AGREE II framework was used for the development of the coding frame for organizing meaning units assigned to the meta-code “Guideline expectations” and is mentioned on page 11, line 14 in the respective paragraph of the methods section. It was not actually a base for the development of the interview structure, though, and we agree with the reviewer that it should not be mentioned in this context in the abstract. Thus, we removed the respective mentioning of the AGREE II framework from the abstract (page 2, line 14).

Page 6 line 3- 'Cochrane Effective Practice Organisation of Care Group taxonomy'-More description is needed as to what this is and how it is used in the interviews and why it was also needed on top of all the other constructs derived from the four theories already used.

We apologize for the misleading phrasing regarding the EPOC list in the text. This list was not used as a theoretical framework, but merely as a reference to a comprehensive list of potential
intervention methods in the health care setting which we used as additional prompts during the interviews and for the development of the interview coding scheme for analysis. We added this information in the respective sentence to make this clearer:

“Additional questions on attitudes and expectations regarding practice guidelines and potential accompanying implementation methods covered the secondary objectives of the study. If necessary, prompts were given based on the Cochrane Effective Practice and Organisation of Care Group (EPOC) [24] taxonomy of interventions, a comprehensive list of potential intervention methods in the health care setting.” (page 8, lines 1-5).

In addition, we removed the EPOC list from the enumeration of theories in the abstract (page 2, line 14).

Instead, we now specifically refer to the EPOC list in the reference to additional file 1 and amended the description of additional file 1 accordingly:

“The complete interview structure including auxiliary questions, the EPOC list of interventions and instructions for the interviewer can be found in Additional File 1 (original German questions and English translation).” (page 7, lines 6-8).

“This file includes the original German interview structure as well as an English translation. This interview structure was developed for qualitative interviews with PCPs based on TDF, CFIR and COM-B as theoretical foundations. The interview structure additionally includes prompts based on the EPOC list of interventions.” (page 26, lines 7-10).

3. Page 6- line 13 it is unclear why data on these specific characteristics were collected. Are they related to a hypothesis or research question? For example do you have a hypothesis about internet use and vertigo management?

Thank you for pointing this out. We added the following explanation:

“The participating PCPs’ socio-demographic characteristics and working environments can be expected to shape the experiences and attitudes they reported in the interviews. To gain a better understanding about the working context of our specific sample and to allow for potential comparisons with the samples of other interview studies, PCP and practice sociodemographic characteristics were collected using the paper-based Questionnaire of Chronic Illness Care in Primary Care (QCPC) [25].” (page 8, lines 10-15).

In addition, we deleted some of the information on collected questionnaire items (electronic practice infrastructure and practice quality management measures) from the methods section (page 8, line 23) and the descriptive table (page 34). These items were collected because we were using a standardized questionnaire but they were not directly relevant to our research question and thus dispensable and potentially confusing for the reader.
4. Page 7- line 9 Very small pool to recruit from. Why not primary care physicians more generally? The authors should reflect on the ways that selecting only participants who have previously been involved in their research about vertigo might have implications for findings.

Thank you for pointing this out.

Actually, recruitment for the parallel cohort study was based on a much broader data base: All PCPs accredited for statutory health insurance reimbursement and located in Munich, Bavaria or the surrounding counties within a 50-kilometer distance to Munich (n=714) were contacted based on a published list from the Bavarian Association of Statutory Health Insurance Physicians. Of these, 77 agreed to participate in our ongoing cohort study. As we realized in the course of this cohort study that vertigo patients are not necessarily evenly distributed over PCP practices, we decided to contact only those PCPs from the cohort study data base who had recently included vertigo patients in the cohort (within the six months prior to February 1st 2016).

We added this information in the methods section:

“Recruitment was based on an available list of 714 primary care providers from Munich and surrounding counties in Bavaria in Southern Germany. Of these, 77 PCPs had consented to recruit vertigo patients into an ongoing observational cohort study for our working group. As we realized in the course of this cohort study that vertigo patients are not necessarily evenly distributed over PCP practices, we decided to contact only those PCPs from the data base who had recently included vertigo patients in the cohort (within the six months prior to February 1st 2016).” (page 10, line 6-12).

We included a paragraph on potential selection bias in the discussion section:

“Still, the following limitations should be kept in mind: First, we recruited PCPs from a list of PCPs who had already shown interest in participating in another vertigo-related study of our working group. Thus, as every research project which requires participant engagement, this study bears some risk of selection bias because the sample is likely to consist of highly engaged PCPs who were already sensitized to the topic. Thus, we might even have underestimated the problems encountered in the management of vertigo and dizziness in primary care.” (page 22, lines 14-20).

Minor comments

5. Page 4 line 4- The opening sentence of the introduction contradicts itself somewhat and leaves the reader uncertain as to the premise of the paper. If vertigo is straightforward to diagnose and treat, where does the 'uncertainty about the management' arise from?

Thank you for pointing this out. The updated introduction now contains a description of the multiplicity of possible causes of vertigo as well as the resulting variety of treatment options.
In addition we restructured the concluding previously ambiguous sentence as follows:

“Although, once correctly diagnosed, treatment of vertigo is mostly quite straightforward, considerable uncertainty about the management of patients presenting with vertigo remains in primary care [2, 3]. There is evidence that an accurate and specific diagnosis could have been assigned to up to 86% of vertiginous patients who had previously received a diagnosis of “unspecific dizziness” by their primary and secondary care physicians [1].” (page 4, lines 10-15).

6. Page 4 line 5- "As 45% of vertigo patients first contacts with the health care system occur on the primary care level, improving vertigo and dizziness management in primary care has the potential to reduce unnecessary health care utilisation"- surely the argument is about the amount of appointments/time spent with primary care services for the ongoing beemanagement of vertigo, not the first contact. I doubt first contact will be reduced? This argument needs to be rethought.

Apparently our original phrasing was misleading for readers. We hope the following explanations clarify the point we actually wanted to make:

“The PCP decides about the patient’s diagnostic path through the health care system, e.g. to initiate diagnostic procedures and treatment, or to refer the patient to the appropriate specialist [4]. Without a targeted and correct first PCP assessment, patients are being sent off in the wrong direction from the very beginning of the diagnostic process, which may result in redundant or unnecessary procedures and medication intake. Vertigo and dizziness play a predominant role among health conditions that are frequently underdiagnosed [1]. There is sound evidence that diagnostic and therapeutic needs of patients with vestibular disease are often unmet [2], leading to chronification and the development of secondary, functional symptoms [5]. As 45% of vertigo and dizziness patients’ first contacts with the health care system occur on the primary care level [6], the PCPs’ expertise is of utmost importance.” (page 4, line 15 to page 5, line 2).

7. Page 4 line 9- This sentence needs to be clearer and really introduce the issue of guideline adherence, specifically for vertigo. At the moment it's hard to see what relevance it has to the paragraph before.

We adapted the paragraph as follows:

“In Germany and internationally, several specialist-driven evidence-based guidelines have been published [7-11], but only recently, the German College of General Practitioners and Family Physicians introduced the first German guideline for the management of vertigo specifically targeting primary care [12]. This presents a unique chance for action, since appropriate support measures accompanying guideline introduction have the potential to increase guideline use and effectiveness [13], for example through identifying and addressing barriers of adequate disease management. Nevertheless, little is known about the primary care providers’ (PCPs’) perspectives, needs and attitudes specifically regarding vertigo management and the support they would need for successful vertigo guideline implementation” (page 5, lines 3-12).
8. Page 4 line 21-More explanation as to what is meant by 'preconditions' is needed. And these 'preconditions' need to be explicitly discussed in the introduction with reference to the existing literature.

We changed the sentence as follows:

“The objective of this study was to understand which challenges and barriers PCPs see when diagnosing and treating patients presenting with vertigo or dizziness and which facilitators and barriers may arise with respect to vertigo guideline introduction. The results of this study will inform the development of interventions to improve vertigo management in primary care.” (page 5, lines 14-18)

9. Page 7 line 1- I'm not sure what 'quality management implementation' refers to here and how it related to the research objectives. As previously mentioned, clarity early on in the paper around what 'precondition' are and mean in this context might shed some light on this?

Apologies for the lack of clarity. The sentence containing the word ‘preconditions’ was adapted as described in our reply to minor comment 9. With regard to the availability of quality management systems in the PCP practice, the respective sentence was deleted in the course of adapting the descriptive table and the respective paragraph in the methods section (for reasons, see major comment 3).

10. Page 9- line 18- Were there any data that didn't code to one of the predetermined constructs? How was this data dealt with if so?

We added the respective information in the methods section:

“If a meaning unit could not be successfully assigned to one of the pre-specified codes, the option of adding a new category in the coding tree was discussed. The respective decisions were made based on consensus between the two coders.” (page 10, line 21 to pag 11, line 2).

“Meaning units referring to the meta-code ‘challenges in vertigo management in primary care’ were assigned to sub-codes according to the specific field of the challenge (‘diagnostics’, ‘therapy’, or ‘referral/health care system’). A fourth sub-code (‘patient-related challenges’) was added in the coding process.” (page 11, lines 3-6).

“Meaning units related to the meta-code ‘barriers and enablers of guideline-adherent care’ were further assigned to sub-codes structured according to the COM-B model (‘psychological capability’, physical capability’, ‘social opportunity’, ‘physical opportunity’, ‘automatic motivation’, ‘reflective motivation’). During the coding process, it turned out that the two types of motivation were frequently overlapping and thus hardly distinguishable. As a consequence these two sub-codes were merged into one (‘motivation’).” (page 11, lines 21-22).
“An additional sub-code (‘refusal of any type of intervention’) was added in the coding process.” (page 12, lines 17-18).

Where it was not yet clearly indicated, we added the following comment in the codebook (additional file 2):

“Remark: this category was added during the coding process.”

11. Page 18 line 8- if development of an intervention was an objective of this research this should be made clearer in the 'objectives' section. Otherwise this should be moved to later in the discussion as a future direction of this work.

We added this information to the abstract as well as to the objectives section:

“Specifically, we wanted to identify facilitators and barriers of successful guideline implementation in order to inform the development of targeted interventions.” (page 2, lines 7-9).

“The results of this study will inform the development of interventions to improve vertigo management in primary care.” (page 5, lines 16-18).

12. Page 19 line 20- you need to explain why this is a strength, what did it add, give examples.

We added a more detailed explanation:

“Another strength of this study lies in the broad theoretical basis which was applied to the development of the interview structure and guided the coding and analysis process. This explicit use of theoretical background, although it is a valuable quality feature of implementation research in primary care, is still far from being standard practice [18, 40]. There is no consensus in criteria selecting the most appropriate theory [41]. Merging relevant constructs from the determinant frameworks TDF and CFIR into one interview structure and organising these constructs according to the COM-B implementation framework of behaviour change gave us the confidence that we would not miss out on important aspects of vertigo and dizziness management in primary care. Also, theory represented a sound starting point for analysis (as the coding scheme could be based on it and definitions of certain constructs such as motivation were available from the literature). Furthermore, having explicitly based our study on theory will provide the possibility to compare our results with those of other theory-based studies.

Our results indicate that, by changing capability, opportunity, and motivation, well-designed guidelines and supporting interventions may improve PCPs’ management of vertigo and dizziness patients. The specific pathways can be graphically depicted and any subsequent
implementation trial can be evaluated using the same theoretical model.” (page 21, line 21, to page 22, line 13).

13. Page 20 line 4- What about the fact they were all selected for having a previous participate in research about vertigo? This needs to be discussed.

Thank you for your comment. A paragraph dealing with this limitation was added to the discussion section. Please see our reply to major comment 4.

14. Page 20 line 8- I think you need to state whether they did or didn't vary and in what ways, i.e. were there differences in richness of data? What were the perceptions of those conducting the interviews?

We added the following paragraph:

“Due to pragmatic reasons, e.g. practices situated in rural areas, and PCPs’ time preferences, we decided to conduct some of the interviews by telephone. It is sometimes argued that the quality levels between face-to-face and the telephone interviews may vary [45]. Indeed, our face-to-face interviews took on average 6 minutes longer than those conducted via telephone, suggesting a greater readiness of the PCPs to share detailed experiences in a face-to-face encounter. At the same time, our impression as interviewers was that both telephone and face-to-face interview participants did not hesitate to share criticism regarding guideline usability and generally provided the same richness of information.” (page 23, lines 3-10)

15. Page 20 line 12- what social desirability effects may have been in play? How may this have impact on your findings? This is too brief a sentence and doesn't sound very considered.

We amended the sentence as follows:

“We cannot completely rule out response bias by social desirability. However, PCPs were generally frank in their criticisms and very open about their problems, therefore we consider the risk for bias rather low. Still, lack of skills as well as negative opinions towards guideline implementation and intervention methods may be even more widespread than can be inferred from our results.” (page 23, lines 11-15).

16. Page 20 More needs to be added about what this research adds, why it is useful and to whom.

We added the following paragraph to the discussion section:

“The specific pathways can be graphically depicted and any subsequent implementation trial can be evaluated using the same theoretical model.” (page 22, lines 11-13).
Additionally, we reworded the conclusion:

“Our results indicate that guideline implementation should be supported through educational meetings and organizational change. Also, authors of guidelines should verify that the proposed actions fit into PCPs’ daily routine or, better still, improve daily routine. This is of particular relevance for the management of vertigo and dizziness where PCPs are dissatisfied with the current situation. Guideline implementation may then contribute to more effective diagnosis and treatment in the primary care setting, and ultimately increase patient well-being.” (page 24, lines 4-10).

Answers to Reviewer 2

Reviewer #2:

This study explores the barriers and facilitators to the management of vertigo by primary care providers in Germany. It is a qualitative study, coding the interviews into an existing theoretical framework.

The study offers some new knowledge re vertigo; its findings re guideline implementation are already well reported in the literature.

Overall this study would benefit from significant restructuring to better present the results of the interviews.

Major comments:

1. Background p4., LL3-4. It does not fit with the findings of this study to state that "the diagnosis of vertigo is mostly quite straightforward." This section needs re-wording.

Thank you for pointing this out. We agree that this sentence was confusing. We restructured the sentence as follows:

“Although, once correctly diagnosed, treatment of vertigo is mostly quite straightforward, considerable uncertainty about the management of patients presenting with vertigo remains in primary care [2, 3]. There is evidence that an accurate and specific diagnosis could have been assigned to up to 86% of vertiginous patients who had previously received a diagnosis of “unspecific dizziness” by their primary and secondary care physicians [1].” (page 4, lines 10-15).

2. Interview structure. P.6, LL6-17. It is not clear why two different implementation theory approaches have been synthesised: TDR (which focuses on individual behaviour change and uses a psychological framework) and CFIR. It is noted that CFIR does allow exploration of patient-practitioner interactions and individual behaviour change in its "individuals involved" domain. This approach, and structuring into COM-B needs justification and the approach needs addressing in the discussion (comment 5.).
Thank you for your comment. We added a more detailed explanation why these approaches were synthesized to the methods section. Please refer to our reply to Reviewer 1 comment no. 2 for the exact changes we made.

In addition, we added the following paragraph to the discussion section:

“Merging relevant constructs from the determinant frameworks TDF and CFIR into one interview structure and organising these constructs according to the COM-B implementation framework of behaviour change gave us the confidence that we would not miss out on important aspects of vertigo and dizziness management in primary care. Also, theory represented a sound starting point for analysis (as the coding scheme could be based on it and definitions of certain constructs such as motivation were available from the literature). Furthermore, having explicitly based our study on theory will provide the possibility to compare our results with those of other theory-based studies.

Our results indicate that, by changing capability, opportunity, and motivation, well-designed guidelines and supporting interventions may improve PCPs’ management of vertigo and dizziness patients. The specific pathways can be graphically depicted and any subsequent implementation trial can be evaluated using the same theoretical model.” (page 22, lines 1-13).

3. Content analysis, p. 8, LL 16-20. A pre-existing coding frame is used - it therefore needs to be explicitly stated that a deductive approach to coding has been used.

We inserted the following sentence:

“We used a deductive approach to coding.”(page 10, line 20).

4. Analysis of the interviews pp.12-17. This section presents a large amount of data across a wide range of domains - it is difficult to follow the narrative. It is also difficult to gain a detailed understanding of the individual themes presented. This section would benefit from significant restructuring - one option might be to focus specifically on barriers and facilitators as defined by the model; and not report the guideline related findings.

Apologies for not being sufficiently clear. We restructured the results section accordingly. Among others, we reordered the section of the results where barriers and facilitators were described, such that for both, vertigo management and guideline implementation, barriers were presented first and facilitators were presented second.

Regarding challenges in vertigo management we are now putting more stress on referring to the additional file, which contains more comprehensive and detailed results:

“(for a comprehensive overview see Additional File 3).” (page 14, lines 14-15)
Also, we reorganised the first paragraph of the discussion section accordingly:

“Our interviews with primary care physicians (PCPs) found that one main challenge in the management of vertigo and dizziness was to establish a definite diagnosis. Main reasons given were lack of opportunities for exchange and cooperation with colleagues, time and financial pressure, and lack of equipment. Improving diagnostic skills should thus be one primary objective.” (page 20, lines 2-6).

5. Discussion. Strengths/Limitations LL 16-21. Need to reflect on merits of merging implementation frameworks

Please refer to our reply to your comment no. 2 for the additional paragraph we inserted in the discussion section.

6. Discussion, p.24 LL3-4. It is clear from the methods this is a highly selected sample of participants as they were recruited from another vertigo related study. They are therefore likely to be "enthusiasts" in the management of vertigo and may not be typical of the "average" PCP. This needs reflecting on.

Thank you for pointing this out. We included a paragraph on potential selection bias in the discussion section:

“Still, the following limitations should be kept in mind: First, we recruited PCPs from a list of PCPs who had already shown interest in participating in another vertigo-related study of our working group. Thus, as every research project which requires participant engagement, this study bears some risk of selection bias because the sample is likely to consist of highly engaged PCPs who were already sensitized to the topic. Thus, we might even have underestimated the problems encountered in the management of vertigo and dizziness in primary care.” (page 20, lines 14-20).

Minor comments:

7. Saturation. P.20, LL6-7. It should be clarified that the reference to "13 interviews sufficient to achieve saturation" refers to qualitative studies using a particular theoretical approach (theory of planned behaviour) - as stated in reference 32.

We added the following clarifications:

“In addition, with 12 interviews in total, the sample size is rather small. However, the physicians included were diverse in their characteristics, so, with information saturation achieved, we are confident that a broad range of relevant aspects was covered. This is in line with literature suggesting that, for theory-based interview studies, around 13 interviews are usually sufficient to achieve saturation [42]. This criterion, which, though originally developed for interview studies
based on the Theory of Planned Behaviour, has also been successfully used in qualitative studies based on the TDF [43, 44].” (page 22, line 20 to page 23, line 2).

Additional corrections to the manuscript (not prompted by the reviewers’ comments):

- Figure one: correction of an error (two ‘of’ in sequence) and one space removed.
- Table: We changed the first letter of the category “always” to capital: “Always”.
- Additional file 1: We inserted grey text colour for interviewer instructions (as stated by the legend)
- Additional file 2: We corrected a copying error on page 8 (no main label necessary for question three as there was no double coding applied).
- Manuscript: We added one more current reference that was missing in the original manuscript:


  “Likewise, several systematic reviews found that guidelines were too complex and complicated for use [35, 36].” (page 21, lines 2-3).

In addition, we corrected the reference to the EPOC checklist (for the development of the coding scheme, we used the 2002 version and not the 2015 version which was cited in the manuscript):