PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	The Swiss chiropractic practice-based research network and musculoskeletal pain cohort pilot study: protocol of a nationwide resource to advance musculoskeletal health services research
AUTHORS	Lalji, Rahim; Hofstetter, Léonie; Kongsted, Alice; von Wyl, Viktor; Puhan, Milo; Hincapié, Cesar

VERSION 1 – REVIEW

REVIEWER	Trager, Robert University Hospitals of Cleveland, Connor Integrative Health Network
REVIEW RETURNED	18-Dec-2021

GENERAL COMMENTS	**The Swiss chiropractic practice-based research network and musculoskeletal pain cohorqt: protocol of a nationwide resource to advance musculoskeletal health services research** **Summary** The author team should be congratulated for developing a robust protocol to establish a chiropractic practice-based research network in Switzerland, and outlining feasibility measures and a nested cohort study using this network. The protocol was well-written overall, and I appreciate that the authors consulted with professional and patient organizations in development of their work. In addition, provision of the supplementary material was helpful which enabled me to analyze the finer details of the study. I only have 2 major comments, however these should be relatively straightforward additions. Minor comments and other miscellaneous remarks were suggested to improve the clarity and readability of the protocol. **Major comments** 1. Methods and analysis: According to the BMJ Open "Instructions for reviewers of study protocols" – it is recommended that the dates of the study be included in the manuscript. I wonder if it would be possible put tentative start date(s) for the study, at least for phase 2 (Swiss ChiCo). I noticed in your ClinicalTrials.gov registration, this is listed as February 1, 2022. Perhaps the two dates would be the same, for consistency. For phase 1, it seems this part of the study may have started already, but I'm not totally

	sure – the ClinicalTrials.gov lists the start date as September 9, 2021. Ideally the Phase 1 date could be clarified as well. 2. P12, L266. Data collection procedures and variables. For the data collection section under Phase 1, it is stated that "All data acquisition will occur electronically using the REDCap web application platform." However, I am wondering if this same system will be used for Phase 2 of the study as well. The "data collection" section for Phase 2 mentions having patients complete surveys on a tablet, and in addition mentions that patients are emailed surveys. To my understanding it is possible to send such surveys to patients through REDCap, yet it is not clear if this is what is being done in the study. In addition, it would be helpful to know if data entered by patients into the study tablet is recorded/transmitted to REDCap automatically or if there is another process to transfer this data to the study team. If another method other than REDCap is utilized, that is OK but it should be mentioned. **Minor comments** 1. Abstract, P2, L27. Regarding this sentence: "Evidence suggests that many MSK pain conditions, such as low back pain and neck pain, share similarities with respect to prognostic factors and clinical care recommendations" – I am not sure this sentence is needed, or potentially it could be altered for improved clarity. The overall focus of the protocol/PBRN is on all MSK pain conditions, however beginning the abstract by mentioning low back pain and neck pain seems to shift the focus towards spine conditions. Maybe different examples of MSK pain conditions could be given (e.g. hip pain, spine pain), however it is still not clear to me why the prognosis/care recommendations are introduced here. Perhaps, simply as an idea of an alternative sentence, it could be stated that while chiropractors often treat MSK conditions, there is limited real-world evidence on the topic of health service outcomes among patients receiving this type of care. 2. Introduction: It might be helpful to include some statistics regarding chiropractic practice in Switzerland. For example, how many chiropractors there are, and what type of settings they usually work in (private practice, hospital affiliated, etc), and which conditions are most commonly treated. If this data is not available, perhaps estimates could be given or more general reviews of conditions treated could be referred to. This information would give readers the background to understand why a PBRN would be relevant, and also give some perspective to the percentage of chiropractors you are aiming to recruit into the PBRN. I did find it very helpful that you discussed the scope of practice for chiropractors in Switzerland. 3. Introduction: P5, L111. I think it might be helpful to see the section regarding objectives separated into its own paragraph. Immediately preceding this, you could provide

	another, small paragraph describing the rationale of your study. The entire introduction, at current, serves as the rationale, however I think the rationale could be restated and paraphrased in a more condensed version. For example (this is just a template): “Given the high burden of MSK pain conditions, which chiropractors frequently manage, and limited real-world evidence on the topic of chiropractic care for MSK conditions, particularly in Switzerland, this protocol outlines the creation of a large PBRN to conduct research on this topic.” Further, the sentences beginning with “Once, established, this PBRN…” could be added after this statement within this “rationale” paragraph. This change will serve 2 purposes, one being to isolate the objectives into a clearly defined section, and two being to restate the purpose of the PBRN. In addition, the reader should at this point have the necessary background knowledge to understand what chiropractors do and why MSK conditions are necessary to study using this strategy. 4. Recruitment. P11, L249. I see there is a goal to recruit 100 patients, however there is no listed stopping point. Is there a limit to how many patients would be eligible for recruitment? 5. Recruitment. P11. I am wondering if there is any further contact between the study team and field clinicians that are recruited into the study, to train them for study policies/procedures. To my understanding, these recruited clinicians are not very much involved in the Phase 2 research practices themselves, considering the study authors are sending surveys to the patients’ emails. However, if clinicians are instructed on the basic overview of the study, given basic guidelines to follow (e.g. for recruitment or general human subjects research training), emailed, or called, or have some kind of ongoing follow-up with the study team, this could be stated. 6. Throughout: Regarding one of the survey questions regarding medication use for Phase 2 – In the survey itself the initial question asks “Are you currently taking medication to reduce your pain?” however the follow up question asks “Are you currently taking medication to reduce your muscle and joint pain?” and also in the text of the protocol it simply says “medication usage” or “prescription medication.” While these things only vary slightly, I think the initial survey question is the most appropriate (Are you currently taking medication to reduce your pain?) because it mentions the word pain, so it is somewhat specific, but not too specific. The question that asks about muscle or joint pain seems too specific – for example if a patient had a tension headache, or epicondylitis of the elbow, would these things be considered muscle or joint pain by the patients themselves? Also, some medications are used off-label to treat pain more generally, so it might be beneficial to capture these as well. I’m also not sure if the slight change to the question was intentional, however a difference in how the question is worded between follow-up intervals could affect how patients answer it, so results may not be as valid as hoped.

	Conversely, in the main text (Table 2), the notion of "medication usage/use" seems too broad and might be changed to "prescription pain medication usage/use" depending on what is preferred and the location in the text. 7. Use of surveys: Table 2 references the Musculoskeletal health questionnaire (MSK-HQ), Brief illness perception questionnaire (Brief IPQ), question 9, and Patient Global Impression of Change (PGIC) scale. I am wondering if you are using translated, validated versions of these, or will be translating them yourselves. I did find German and Italian versions of the MSK-HQ, which could be relevant to mention and/or cite. I can imagine the difficulties of working with patients using multiple different languages, and understand that you have accounted for several challenges in this regard. If you must rely on translating these documents yourselves, that is OK too but could be stated. a. Karstens, Sven, et al. "German translation, cross-cultural adaptation and validation of the Musculoskeletal Health Questionnaire: cohort study." European Journal of Physical and Rehabilitation Medicine (2020). b. Galeoto, G., et al. "Musculoskeletal Health Questionnaire: translation, cultural adaptation and validation of the Italian version (MSK-HQ-I)." Muscles, Ligaments & Tendons Journal (MLTJ) 9.2 (2019). **Miscellaneous remarks for clarity** 1. P4, L77. The acronym GDP is not explained at its first use. I believe this should state "gross domestic product (GDP)". 2. "Swiss chiropractic association" vs. "Swiss Chiropractic Association". Both the uncapitalized and capitalized forms are used – I prefer the capital letters as it tells the readers this is a professional organization. The uncapitalized version appears in the Strengths and Limitations section. 3. "patient association" vs "Swiss Chiropractic Patient Association" – The full capitalized version is not used here, but is used in the ClinicalTrials.gov registration. I prefer the full capitalized version. There are 2 instances of this that could be changed (Strengths and Limitations, also P8, L148) 4. P10, L207 – Perhaps the word "practitioner" could be added before "self-confidence" here - "The first primary clinical outcome is self-confidence in the clinical management of 208 patients with low back pain (as measured by the practitioner self-confidence scale (PCS))." The same recommendation could be made to add "practitioner" before "biomedical versus biopsychosocial" in line 211. 5. P11, L229 – "Patient participants will be eligible to participate" – I believe this could be shortened to "Patients will be eligible to participate" because it seems redundant at current.

REVIEWER	Lam, Kenneth C

	A T Still University - Arizona Campus
REVIEW RETURNED	21-Jan-2022

GENERAL COMMENTS	General comments Thank you for the opportunity to review this manuscript. The primary aims were to describe the development of the Swiss chiropractic PBRN and describe the first study to be launched within the PBRN (Swiss ChiCo). I commend the authors on this effort as PBRNs are important organizations that can facilitate the translation of research evidence into routine care. Although I understand the value of the PBRN, I found the manuscript to be difficult to follow. Personally, I had to read the manuscript several times before I understood what the primary aims of the manuscript were. I believe there are several things contributing to my confusion: • At times, the aims of the manuscript (to describe the development of the PBRN and to describe the first study) are get mixed in with the aims of the PBRN and the first study. There is a slight but meaningful distinction between the two sets of aims. When used interchangeably throughout the manuscript, it makes for a confusing read at times. • Related to the above, at times, the first aim (development of the PBRN) was referred to as a “study” and the two aims together were also referred to as a “study”. This made it difficult to follow at times as I was not sure which “study” the narrative was being referred to. Consider referring to the overall effort as a “project” and leave the term “study” exclusively for describing the second aim of the manuscript. • Past, present, and future tenses were used throughout the methods. This switch throughout the methods made it difficult to follow as well. Since this manuscript is a “study protocol”, my recommendation is to only use the future tense throughout the methods section, even if certain aspects of the overall PBRN effort have been completed. It will simply make it easier for the reader to follow. For example, Lines 181-187 describe tasks that have already been completed and the proceeding lines are tasks that have yet to be completed. If simply presented as, “We plan to recruit clinicians at the annual chiropractic conference by doing x, y, z….and for those who do not attend the conference, we plan to use an electronic invitation sent via email…”, it would make for an easier read for the reader I believe. Specific comments Lines 66-67. This bullet is not clear. Please review and edit as needed. Line 86. ...is the lack OF practice-based data... Line 107-111. Suggest moving this to the methods section as it begins to describe the procedures of the development of the PBRN. Line 111. For clarity, consider rewording the objective statement to say: The main objectives of this narrative are to: (1) to describe the development of a MSK focused... and (2) to describe the methods of the first study within the PBRN

	Lines 129-136. For clarity, suggest re-organizing/rewording to: This current project will consist of two phases. In Phase 1, we aim to develop the Swiss Chiropractic PBRN and describe the demographics of chiropractic clinicians within the nationwide Swiss Chiropractice PBRN. In Phase 2, we aim to launch a 12-week observational prospective cohort study (ie, the Swiss ChiCo study) to describe the patient and treatment characteristics of patients under the care of clinicians within the Swiss Chiropractic PBRN. Line 139. Who specifically are the stakeholders for the PBRN? What processes will be used to identify an appropriate set of stakeholders? How will stakeholders be identified and recruited for this effort? This will be helpful to know for readers who would like to develop a PBRN. Stakeholder engagement seems like a central part of the proposed PBRN. More details regarding this aspect would be helpful to other researchers seeking to create a PBRN. Line 141. Related to the previous comment, how will "shared understanding" be specfically reached? A consensus by all members? By majority? The specific processes would be helpful for researchers interested in developing a PBRN. Line 192. What is the basis for the 50% threshold? Is there evidence to support that this threshold is meaningful and/or feasible? What happens if the team does not reach this threshold? Is the PBRN invalid? Lines 205-206. This refers to Phase 2 but Phase 2 has not been presented yet. Line 207: "The first primary clinical outcome is..." This implies present tense. Should be "will be"… Lines 302-305. This is important but not as informative for the reader. It would be more meaningful to highlight major ethical concerns of developing and managing a PBRN that the authors and ethics committee addressed during the ethics approval process. For example, was the handling and management of clinician and patient data addressed? If so, what were the major considerations for this component?

VERSION 1 – AUTHOR RESPONSE

Reviewer 1 Comments	Author Response
Congratulations on your protocol. I enjoyed reading/reviewing it and I'm looking forward to see the results from the PBRN.	Thank you for your review of our protocol manuscript and your excitement for future results.

Reviewer 2 Comments	Author Response
Major:	
At times, the aims of the manuscript (to describe the development of the PBRN and to describe the first study) are get mixed in with the aims of the PBRN and the first study. There is a slight but meaningful distinction between the two sets of aims. When used interchangeably throughout the manuscript, it makes for a confusing read at times. Related to the above, at times, the first aim (development of the PBRN) was referred to as a "study" and the two aims together were also referred to as a "study". This made it difficult to follow at times as I was not sure which "study" the narrative was being referred to. Consider referring to the overall effort as a "project" and	Thank you for these recommendations to improve manuscript. References to phase 1 (the PBRN) are now described as a PBRN throughout the manuscript. The word "study" is now exclusively used for Phase 2 (the Swiss ChiCo pilot study). The word "project" is used when we make reference to phase 1 and phase 2 together.

leave the term “study” exclusively for describing the second aim of the manuscript.	
Past, present, and future tenses were used throughout the methods. This switch throughout the methods made it difficult to follow as well. Since this manuscript is a “study protocol”, my recommendation is to only use the future tense throughout the methods section, even if certain aspects of the overall PBRN effort have been completed. It will simply make it easier for the reader to follow. For example, Lines 181-187 describe tasks that have already been completed and the proceeding lines are tasks that have yet to be completed. If simply presented as, “We plan to recruit clinicians at the annual chiropractic conference by doing x, y, z….and for those who do not attend the conference, we plan to use an electronic invitation sent via email…”, it would make for an easier read for the reader I believe.	“We have incorporated this change throughout the manuscript when possible. The only areas which have not been changed to future tense is when describing stakeholder engagement as these “past” activities have informed the protocol methods. A few examples of the revisions made follow: (P8, L182). “To aid with clinician recruitment, we plan to launch the PBRN development phase on September 9, 2021 at the annual ChiroSuisse Continuing Education (CE) Convention 2021 (Lausanne, September 9-11, 2021). Clinicians will have the opportunity to ask questions directly of the project team, test electronic study methods, sign up as a clinician member of the PBRN, and provide input and feedback for the subsequent Swiss ChiCo pilot study.” (P8, L188). “For those who do not attend the conference, we plan to use electronic email invitations containing the Research Electronic Data Capture (REDCap) PBRN entry survey link.”
Specific Comments	
Lines 66-67. This bullet is not clear. Please review and edit as needed.	Based on the editor’s recommendation this bullet point was removed.
Line 86. ...is the lack OF practice-based data...	This has been changed (P4, L86)
Line 107-111. Suggest moving this to the	This has been moved to the methods to under

methods section as it begins to describe the procedures of the development of the PBRN.	the patient and public involvement header (P6, L145) "Other recommendations included the practicality to start small with a small cohort study to first test data collection methods, as well to explore both clinical and feasibility related objectives to help drive recruitment from community-based chiropractors and patients."
Line 111.For clarity, consider rewording the objective statement to say: The main objectives of this narrative are to: (1) to describe the development of a MSK focused... and (2) to describe the methods of the first study within the PBRN.	The objectives within the introduction have been re-worded (P5, L115). "The main objectives of this report are to: 1) describe the development of a MSK focused PBRN and describe the enrolment of Swiss chiropractors into the PBRN; and 2) describe the methods of the first nested study to be

	conducted within the PBRN – an observational prospective patient cohort pilot study”
Lines 129-136. For clarity, suggest re-organizing/rewording to: This current project will consist of two phases. In Phase 1, we aim to develop the Swiss Chiropractic PBRN and describe the demographics of chiropractic clinicians within the nationwide Swiss Chiropractic PBRN. In Phase 2, we aim to launch a 12-week observational prospective cohort study (ie, the Swiss ChiCo study) to describe the patient and treatment characteristics of patients under the care of clinicians within the Swiss Chiropractic PBRN.	This has been re-worded based on the suggestions (P6, L127). “The current project will consist of two phases. Each project phase will have a specific aim and report on two primary feasibility and clinical outcomes related to this aim. In phase 1, we aim to develop the Swiss chiropractic PBRN and describe the demographics of participating chiropractors at project initiation using a cross-sectional study design (ClinicalTrials.gov identifier: NCT05046249). In phase 2, we aim to launch a 12-week observational prospective Swiss chiropractic cohort (Swiss ChiCo) pilot study which will assess the feasibility for longitudinal data collection and describe the clinical course of patients with MSK pain presenting to Swiss chiropractors.”
Line 139. Who specifically are the stakeholders for the PBRN? What processes will be used to identify an appropriate set of stakeholders? How will stakeholders be identified and recruited for this effort? This will be helpful to know for readers who would like to develop a PBRN. Stakeholder engagement seems like a central part of the proposed PBRN. More details regarding this aspect would be helpful to other	We have now listed identified key stakeholders in the first sentence under the patient and public involvement heading (P6, L137). “Key stakeholders identified for the development of the PBRN include the Swiss Chiropractic Association (ChiroSuisse), the Swiss Chiropractic Patient Association (Pro Chiropractic Switzerland), Swiss chiropractors, and an

researchers seeking to create a PBRN.	international group of researchers with experience in practice-based research.”
Line 141. Related to the previous comment, how will "shared understanding" be specfically reached? A consensus by all members? By majority? The specific processes would be helpful for researchers interested in developing a PBRN	This has been slightly expanded at (P6, L142) “A consensus-based understanding was reached by all members which outlined the need for more clinical MSK research within the Swiss setting and a pledge to provide support to achieve this project goal. Other recommendations included the practicality to start with a small cohort study to first test data collection methods, as well to explore both clinical and feasibility related objectives to help drive recruitment from community-based chiropractors and patients.”
Line 192. What is the basis for the 50% threshold? Is there evidence to support that this	We have elaborated on this point and provided references (P9, L194)

threshold is meaningful and/or feasible? What happens if the team does not reach this threshold? Is the PBRN invalid?	"Similar to other PBRNs within the scope of chiropractic and MSK health, we hope to achieve a clinician participation proportion of approximately 50%." We also provided a threshold of the number of clinics necessary to initiation the Swiss chiropractic PBRN (P15, L317) "Based on the definition of a PBRN from the Agency for Healthcare Research and Quality (AHRQ), it will be deemed feasible to initiate the Swiss chiropractic PBRN and expand the Swiss ChiCo pilot study if at least 15 clinical practices agree to participate in the Swiss chiropractic PBRN…"
Lines 205-206. This refers to Phase 2 but Phase 2 has not been presented yet	This has been moved up to (P6, L127), in the methods section when describing study design. "The current project will consist of two phases. In phase 1, we aim to develop the Swiss chiropractic PBRN and describe the demographics of participating chiropractors at project initiation using a cross-sectional study design. In phase 2, we aim to launch a 12-week observational prospective Swiss chiropractic cohort (Swiss ChiCo) pilot study which will assess the feasibility for longitudinal data collection and describe the clinical course of patients with MSK pain presenting to Swiss chiropractors."

Line 207: "The first primary clinical outcome is..." This implies present tense. Should be "will be"…	This has been revised as suggested and also incorporated throughout the entire manuscript. (P10, L209): “The primary clinical outcome will be practitioner self-confidence in the clinical management of patients with low back pain…”
Lines 302-305. This is important but not as informative for the reader. It would be more meaningful to highlight major ethical concerns of developing and managing a PBRN that the authors and ethics committee addressed during the ethics approval process. For example, was the handling and management of clinician and patient data addressed? If so, what were the major considerations for this component?	We have expanded under the ethics and dissemination heading within the manuscript (P15, L326) “Clinician responses for PBRN development will be stored securely within REDCap, but not anonymous due to necessity of identifying clinicians to participate in future nested research projects. Data collected for PBRN development and for the Swiss ChiCo pilot study will be stored as two separate projects within REDCap.

	Individual-level data will not be shared with study stakeholders".
Reviewer 3 Comments	Author response
Major:	
1. Methods and analysis: According to the BMJ Open "Instructions for reviewers of study protocols" – it is recommended that the dates of the study be included in the manuscript. I wonder if it would be possible put tentative start date(s) for the study, at least for phase 2 (Swiss ChiCo). I noticed in your ClinicalTrials.gov registration, this is listed as February 1, 2022. Perhaps the two dates would be the same, for consistency. For phase 1, it seems this part of the study may have started already, but I'm not totally sure – the ClinicalTrials.gov lists the start date as September 9, 2021. Ideally the Phase 1 date could be clarified as well.	Thank you for providing such a detailed peer-review of our protocol manuscript. The research team greatly appreciates the reviewers' comments to help strengthen the manuscript and hope that we have addressed them effectively. We have added the recruitment start date and end date of phase 1 into the protocol methods (P8, L183/P8,193) The tentative phase 2 start date has also been added to the manuscript (P12, L256). This has also been updated in the clinicaltrials.gov record.
2. P12, L266. Data collection procedures and variables. For the data collection section under Phase 1, it is stated that "All data acquisition will occur electronically using the REDCap web application platform." However, I am wondering if this same system will be used for Phase 2 of the study as well. The "data collection" section for Phase 2 mentions having patients complete surveys on a tablet, and in addition mentions that patients are emailed surveys. To my understanding it is possible to send such surveys	We have provided more background regarding the data collection process in phase 2 of this study. "REDCap will be used for longitudinal data collection, with survey data transmitted automatically to the research team at Balgrist University Hospital and the University of Zurich. (P13, L285). Similar administration procedures were performed for the Danish chiropractic low back pain cohort study."

to patients through REDCap, yet it is not clear if this is what is being done in the study. In addition, it would be helpful to know if data entered by patients into the study tablet is recorded/transmitted to REDCap automatically or if there is another process to transfer this data to the study team. If another method other than REDCap is utilized, that is OK but it should be mentioned	
Minor	
1. Abstract, P2, L27, Regarding this sentence: "Evidence suggests that many MSK pain conditions, such as low back pain and neck pain, share similarities with respect to prognostic factors and clinical care recommendations" – I am not sure this sentence is needed, or potentially it could be altered for improved clarity. The overall focus of the protocol/PBRN is	The abstract has been revised based on this recommendation and the point regarding MSK prognostic factors has also been removed and replaced (P2, L28) "Musculoskeletal (MSK) pain conditions, a leading cause of global disability, are usually first managed in primary care settings such as

on all MSK pain conditions, however beginning the abstract by mentioning low back pain and neck pain seems to shift the focus towards spine conditions. Maybe different examples of MSK pain conditions could be given (e.g. hip pain, spine pain), however it is still not clear to me why the prognosis/care recommendations are introduced here. Perhaps, simply as an idea of an alternative sentence, it could be stated that while chiropractors often treat MSK conditions, there is limited real-world evidence on the topic of health service outcomes among patients receiving this type of care.	medical, physiotherapy, and chiropractic community-based practices. While chiropractors often treat MSK conditions, there is limited real-world evidence on the topic of health service outcomes among patients receiving this type of care.”
2. Introduction: It might be helpful to include some statistics regarding chiropractic practice in Switzerland. For example, how many chiropractors there are, and what type of settings they usually work in (private practice, hospital affiliated, etc), and which conditions are most commonly treated. If this data is not available, perhaps estimates could be given or more general reviews of conditions treated could be referred to. This information would give readers the background to understand why a PBRN would be relevant, and also give some perspective to the percentage of chiropractors you are aiming to recruit into the PBRN. I did find it very helpful that you discussed the scope of practice for chiropractors in Switzerland.	We have added a sentence to the introduction to provide additional background information regarding chiropractic in Switzerland (P4, L96). “As of December 2021, there were approximately 326 chiropractors practicing across Switzerland with the large majority providing care in community-based settings.”
3. Introduction: P5, L111. I think it might be	We have now created two specific paragraphs

helpful to see the section regarding objectives separated into its own paragraph. Immediately preceding this, you could provide another, small paragraph describing the rationale of your study. The entire introduction, at current, serves as the rationale, however I think the rationale could be restated and paraphrased in a more condensed version. For example (this is just a template): "Given the high burden of MSK pain conditions, which chiropractors frequently manage, and limited real-world evidence on the topic of chiropractic care for MSK conditions, particularly in Switzerland, this protocol outlines the creation of a large PBRN to conduct research on this topic." Further, the sentences beginning with "Once, established, this PBRN..." could be added after this statement within this "rationale" paragraph. This change will serve 2 purposes, one	within the introduction as suggested (P5, L107) "Given the high burden of MSK pain conditions, which are frequently managed by chiropractors, and limited practice-based evidence on the topic of chiropractic care for MSK pain conditions, particularly in Switzerland, this protocol outlines the creation of a nationwide PBRN and subsequent nested prospective cohort (Swiss ChiCo) pilot study for chiropractic patients with MSK pain" "The main objectives of this report are to: 1) describe the development of a MSK focused PBRN and describe the enrolment of Swiss chiropractors into the PBRN; and 2) describe the methods of the first nested study to be

being to isolate the objectives into a clearly defined section, and two being to restate the purpose of the PBRN. In addition, the reader should at this point have the necessary background knowledge to understand what chiropractors do and why MSK conditions are necessary to study using this strategy	conducted within the PBRN - an observational prospective patient cohort pilot study.
4. Recruitment. P11, L249. I see there is a goal to recruit 100 patients, however there is no listed stopping point. Is there a limit to how many patients would be eligible for recruitment	Stopping point and rationale has now been added (P12, L258) "Based on this work, we will aim to recruit at least 100 patient participants to enable a preliminary characterisation of the population, enabled by representative selection of chiropractic clinicians with respect to language region. A stopping point for recruitment will be set at 200 patients."
5. Recruitment. P11. I am wondering if there is any further contact between the study team and field clinicians that are recruited into the study, to train them for study policies/procedures. To my understanding, these recruited clinicians are not very much involved in the Phase 2 research practices themselves, considering the study authors are sending surveys to the patients' emails. However, if clinicians are instructed on the basic overview of the study, given basic guidelines to follow (e.g. for recruitment or general human subjects research training), emailed, or called, or have some kind of ongoing	One of the main goals which we had when developing this protocol was limiting the burden on clinicians, and so you are correct that the clinicians themselves are not too involved in the phase 2 research practices - allowing them to focus on patient care. However, we have added some additional information regarding contact between the research team and phase 2 participating clinicians prior to patient recruitment (P11, L253) "We will hold pilot study introductory meetings

follow-up with the study team, this could be stated.	with participant clinicians and clinical staff to reinforce study objectives, methods and procedures prior to the tentative date for initiation of the patient cohort pilot study recruitment of April 01, 2022.”
Throughout: Regarding one of the survey questions regarding medication use for Phase 2 – In the survey itself the initial question asks “Are you currently taking medication to reduce your pain?” however the follow up question asks “Are you currently taking medication to reduce your muscle and joint pain?” and also in the text of the protocol it simply says “medication usage” or “prescription medication.” While these things only vary slightly, I think the initial survey question is the most appropriate (Are you currently taking medication to reduce your pain?) because it mentions the word pain, so it is	Thank you for bringing this to the authors attention. We agree that the focus should be kept to both prescription and non-prescription pain medication. From your suggestions, we have made multiple changes in both the manuscript and the supplemental appendix. Table two in the manuscript which previously asked about “Medication use” has now been changed to “Pain medication use” and the associated instrument category now includes “Medication use for pain reduction (prescription or non-prescription).” The questions in the supplementary appendix are

somewhat specific, but not too specific. The question that asks about muscle or joint pain seems too specific – for example if a patient had a tension headache, or epicondylitis of the elbow, would these things be considered muscle or joint pain by the patients themselves? Also, some medications are used off-label to treat pain more generally, so it might be beneficial to capture these as well. I'm also not sure if the slight change to the question was intentional, however a difference in how the question is worded between follow-up intervals could affect how patients answer it, so results may not be as valid as hoped. Conversely, in the main text (Table 2), the notion of "medication usage/use" seems too broad and might be changed to "prescription pain medication usage/use" depending on what is preferred and the location in the text.	now similar and ask "Are you currently taking medication to reduce your pain?"
Use of surveys: Table 2 references the Musculoskeletal health questionnaire (MSK-HQ), Brief illness perception questionnaire (Brief IPQ), question 9, and Patient Global Impression of Change (PGIC) scale. I am wondering if you are using translated, validated versions of these, or will be translating them yourselves. I did find German and Italian versions of the MSK-HQ, which could be relevant to mention and/or cite. I can imagine the difficulties of working with patients using multiple different languages, and understand that you have accounted for several	Thank you for providing these references to us. The reviewer is correct in noting the challenges with working in various different languages. We have provided references for the validated, translated versions of the outcome measures which we will be using. When we were unable to use a validated, translated version either a non-certified version or translation of the outcome measure was performed by a native speaker (P13, L290). "Validated, translated versions of the patient

challenges in this regard. If you must rely on translating these documents yourselves, that is OK too but could be stated

reported outcome measures (PROMs) will be used when possible. If not available, translation of the PROMs by a native speaker will be performed.”

1. Karstens, Sven, et al. "German translation, cross-cultural adaptation and validation of the Musculoskeletal Health Questionnaire: cohort study." European Journal of Physical and Rehabilitation Medicine (2020).
2. Galeoto, G., et al. "Musculoskeletal Health Questionnaire: translation, cultural adaptation and validation of the Italian version (MSK-HQ-I)." Muscles, Ligaments & Tendons Journal (MLTJ) 9.2 (2019).

Miscellaneous remarks for clarity

P4, L77. The acronym GDP is not explained at its first use. I believe this should state “gross domestic product (GDP)”.	Thank you for your additional comments to increase the clarity of this work, “gross domestic product” is now fully specified.
“Swiss chiropractic association” vs. “Swiss Chiropractic Association”. Both the uncapitalized and capitalized forms are used – I prefer the capital letters as it tells the readers this is a professional organization. The uncapitalized version appears in the Strengths and Limitations section.	Capital letters have now been used throughout the manuscript
“patient association” vs “Swiss – The full capitalized version is not used here, but is used in the ClinicalTrials.gov registration. I prefer the full version. There are 2 instances of this that could be and also P8, L148)	This has now been capitalized throughout the manuscript.
P10, L207 – Perhaps the word “practitioner” could be added before “self-confidence” here - “The first primary clinical outcome is self-confidence in the clinical management of 208 patients with low back pain (as measured by the practitioner self-confidence scale (PCS)).” The same recommendation could be made to add “practitioner” before “biomedical versus biopsychosocial” in line 211.	Practitioner has now been added before “self-confidence” (P10, L208), and before “biomedical versus biopsychosocial” (P10, L212)
P11, L229 – “Patient participants will be eligible to participate” – I believe this could be shortened to “Patients will be eligible to participate” because it seems redundant at current	This has now been shortened according to the recommendation.

VERSION 2 – REVIEW

REVIEWER	Trager, Robert University Hospitals of Cleveland, Connor Integrative Health Network
REVIEW RETURNED	14-Mar-2022

GENERAL COMMENTS	Authors - you have done a great job in revising and improving your manuscript. I wish you the best in your efforts with this project and am eager to see the final results.

REVIEWER	Lam, Kenneth C A T Still University - Arizona Campus
REVIEW RETURNED	24-Mar-2022

GENERAL COMMENTS	Thank you for making changes to the manuscript. In its current form, it is much easier to follow the flow and aims of the project. I have a few more suggestions to further improve on the flow of the manuscript. Line 109: Consider replacing protocol with "report" as you have in Line 115. Lines 136 - 172: My understanding is that this section - "Patient and public involvement" - has already been completed and that Phase 1 and 2 of the study will be completed in the future. If this is accurate, I suggest moving this section to start off the methods section (ie, before the "study design" section). This way, there is sequential order in the presented information. That is, first present what has been completed and then present what will be completed (Phase 1 and 2) for the PBRN. Related, consider changing the sub-heading to "pilot study" or "preliminary data" or "stakeholder engagement" and start off the section with the purpose of this phase - eg, to guide the development of the PBRN and future studies within the PBRN, we hosted several events to gather information from key stakeholders. Stakeholder engagement is an important aspect of practice-based research but most readers will likely not have this background knowledge. So it is likely best to explicitly explain to them the purpose of such engagement and how it fits in with the remaining components of the protocol (ie, Phase 1 and 2) Line 208: The primary outcome is stated to be "self-confidence in the clinical management of patients with low back pain". However, the aim of Phase 1 is identified as "development of the PBRN" (Line 174). To me, the primary aim of this phase does not match the primary outcome of the phase. Seems like the feasibility outcomes in the next section would be more aligned with the aim and the "self-confidence in clinical management of patients with low back pain" would be a part of the general demographics of the clinicians. Consider aligning for clarity.

VERSION 2 – AUTHOR RESPONSE

Reviewer 1 Comments	Author Response
Authors - you have done a great job in revising and improving your manuscript. I wish you the best in your efforts with this project and am eager to see the final results.	Dear reviewer, thank you for your critique of our protocol manuscript we look forward to sharing our results when available.
Reviewer 2 Comments	Author Response
Minor:	
Thank you for making changes to the manuscript. In its current form, it is much easier to follow the flow and aims of the project. I have a few more suggestions to further improve on the flow of the manuscript.	Dear reviewer, thank you once again for your detailed review of this work. I'm glad to hear the changes which were made led to an improved flow. Responses to your comments can be found below.
Line 109: Consider replacing protocol with "report" as you have in Line 115.	"Protocol report" is now used in both Line 109 and Line 115.
My understanding is that this section - "Patient and public involvement" - has already been completed and that Phase 1 and 2 of the study will be completed in the future. If this is accurate, I suggest moving this section to start off the methods section (ie, before the "study design" section). This way, there is sequential order in the presented information. That is, first present what has been completed and then present what will be completed (Phase 1 and 2) for the PBRN.	In our opinion, it would be difficult to speak to the specifics of the patient and public involvement process without providing some starting point - an introduction of the overall aims, objectives and the nested design. For example, it is difficult to speak to clinicians recommending recruiting 10 patients each as feasible for the pilot study, without first introducing feasibility related outcomes in some way. After this has been introduced, in our opinion, the reader can then better understand why certain participatory processes were undertaken. This section is still listed before the specifics of Phase 1 and Phase 2 are described within the manuscript. Therefore, we have decided not to move the patient and public involvement section up as per the recommendation.
Related, consider changing the sub-heading to "pilot study" or "preliminary data" or	The subheading of "Patient and public involvement" was chosen due to BMJ Open

"stakeholder engagement" and start off the section with the purpose of this phase - eg, to guide the development of the PBRN and future studies within the PBRN, we hosted several events to gather information from key stakeholders. Stakeholder engagement is an important aspect of practice-based research but most readers will likely not have this background knowledge. So, it is likely best to explicitly explain to them the purpose of such engagement and how it fits in with the remaining components of the protocol (ie, Phase 1 and 2)	journal policy requirements. “To support co-production of research we request that authors provide a Patient and Public Involvement statement in the methods section of their papers, under the subheading Patient and public involvement”. (https://bmjopen.bmj.com/pages/authors) We have added your recommendation for introducing readers to patient and public involvement, in this section of the manuscript (Line 138). “To guide development of this project, we hosted several events to gather information from key stakeholders”
Line 208: The primary outcome is stated to be "self-confidence in the clinical management of patients with low back pain". However, the aim of Phase 1 is identified as "development of the PBRN" (Line 174). To me, the primary aim of this phase does not match the primary outcome of the phase. Seems like the feasibility outcomes in the next section would be more aligned with the aim and the "self-confidence in clinical management of patients with low back pain" would be a part of the general demographics of the clinicians. Consider aligning for clarity.	Thank you for this comment. We agree that, taken individually, the outcome of “self-confidence in the clinical management of patients with low back pain” does not align as a primary aim of this phase to “develop a PBRN and describe the demographics of participating chiropractors” (L130). However, as mentioned in the study design section (L128), the overarching aim contains 2 related clinical and 2 feasibility outcomes. The outcomes under the overarching aim of developing a PBRN include 1) Practitioner self-confidence; 2) the pain attitudes and beliefs scale; 3) clinician participation proportion and 4) motivation for clinician participation in the subsequent study. Taken together, these outcomes would align with our aim. These clinical outcomes were included as stakeholders believed it would be important to include for study enrollment. This was specified on line 148. Our stakeholders were concerned that a focus only on feasibility-related outcomes would lead to a poorer amount of clinician and patient recruitment. Due to the above points, we have (humbly) decided not to make this change.