PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Prevalence and factors associated with joint pain in Nepal: Findings from a countrywide cross-sectional STEPS survey
AUTHORS	Poudyal, Anil; Bista, Bihungum; Gyanwali, Pradip; karki, Shristi; Bhattarai, Saroj; Sharma, Sweekriti; Dhimal, Meghnath

VERSION 1 – REVIEW

REVIEWER	Ellard, David University of Warwick, Clinical Trials Unit
REVIEW RETURNED	06-May-2021

GENERAL COMMENTS	bmjopen-2021-051536: Prevalence and factors associated with chronic joint pain in Nepal: Findings from a countrywide cross-sectional STEPS survey. Thank you for inviting me to review this interesting manuscript. This is a study based on data from a recent national survey in Nepal. This aims of the study aims were to determine the prevalence of chronic joint pain and its association with demographic, socioeconomic, and behavioural factors in the adult population of Nepal. The Abstract is too the point and reports what is presented in the paper. Sadly I have some concerns with what is presented in the paper overall. The aim here is to provide prevalence figures that may help shape future healthcare in the country. If this is the aim I feel that this article falls short in some key areas. Firstly, and probably most importantly here is the lack of a clear definition of what is meant by Chronic pain. The abstract and the methods section states: “Chronic joint pain in our study was based on any self-reported symptoms of joint pain, stiffness and swelling lasting for more than 1 month in the past 12 months.” This does not accord with normal definitions of ‘chronic pain’ that usually state: “Chronic or persistent pain is pain that carries on for longer than 12 weeks despite medication or treatment.” Indeed, recently the WHO adopted the ICD-11 classification. Whilst I recognise that the survey was carried out before the ICD-11 definition was released the other definitions were in existence and not used. I took the time to review the actual survey questions and to all extents and purposes most of the assumptions made are based on the respondent answering yes or no to one question in a survey that has many hundreds of questions. Answering YES to this question has been taken as a self-report that this person lives with chronic pain. But all it tells us is that they are saying that they have had this pain (that wasn’t an injury) for at least a month… nothing else is taken into account (e.g. other health conditions). This I feel is a major flaw in the figures reported. Table one is a little misleading in that whilst the ‘survey’ sample is 5,593 this is not the

	chronic joint pain sample size the ‘chronic joint pain’ label spans both columns two and three. As noted in the abstract the chronic joint pain population in this survey was 17% of the 5,593. Whilst I have raised these concerns I do feel that there is some very interesting data in this survey that can a should help shape healthcare in the country. It is just that it is not a good idea to make grand claims from data that has more limitations than are reported. I wish the authors well with their future research.

REVIEWER	Ćwirlej-Sozańska, Agnieszka
REVIEW RETURNED	25-May-2021

GENERAL COMMENTS	Thank you very much for the opportunity to review this manuscript. Doing research in developing countries like Nepal and publishing the results internationally is very important. Below are my comments that I hope will help improve the manuscript. Abstract Lines 23-26 – add secondary outcome Describe better the point “primary and secondary outcome measures” Results ??? – The text does not agree with the results in Table 1 that pain is most common among the richest and students Lines 42-49 – Please shorten the limitations The wording "... consultation behavior" in the abstract is unclear, as it has not been explained beforehand what the authors mean and how such a measurement was made. Kewords – think about the keywords, it would be worth choosing them more accurately, as well as that they should be different from the words in the title of the work. Introduction: Lines 59-62 – add an additional article supporting the thesis on limitations, disability and more frequent incapacity to work of people with joint diseases, e.g. : DOI: 10.12659/MSM.904845. In the introduction, a paragraph should be added about what is known about sociodemographic and behavioral factors associated with joint pain. Methods Study design During what period was the study conducted? Line 82 - Only information on NCD risk factors was collected in the study? The collected information should be related to the purpose of the study presented in the article. Describe it a bit more precisely. Line 81 - STEPS survey - it would be good to enter the full name of the survey the first time Sampling Describe the sample size, the size of the measurement error and the confidence level. Provide the method of selecting the respondents. The authors gave a footnote, however, it would be good to include the basic information. Line 88 – enumerator or enumerators?

	Outcomes Add secondary outcomes. Covariates How was the level of physical activity sufficient or inadequate determined? Describe it exactly. This is especially important as the results are contradictory. In order to work, you divide the factors into: demographic, socioeconomic, and behavioral factors. Assign the listed factors to each group. Data analysis: Describe bivariate and multivariable analyzes - for what purpose did you make these two models? Explain it carefully. Provide data describing the level of fit of the models. Results Table 1 - Standardize the record of the number of respondents - (n= 5,593) ora n = 5593 Table 1 – why was underweight not separated from normal weight? Table 2 – only underweight appears, what about normal body weight? Below table 2 is a description: „* p<0.05; ** p<0.01; *** p<0.001” – these designations were not used in the table Table 2 - educational attainment - you get divergent results - using the two models creates a mess. Explain well in the methodology the sense of using two models. In the discussion, consider the differences that arise. Discussion Consider whether defining the study population "adult" is correct if you are testing people aged 15? Lines 197-203 - Your analysis of the relationship between physical activity and joint pain is not satisfactory. First, in the methodology, you need to explain on what basis you determined your physical activity. Was it physical exercise or physical work? Well-planned physical activity has a protective effect on the joints - this is confirmed by numerous scientific studies, while joint overload related to work or competitive sports correlate with a greater frequency of pain problems. This fragment requires re-examination and re-description. Lines 213-215 - verify your data in the table, it is worth analyzing underweight, norm, overweight and obesity separately. Underweight and obesity are associated with joint pain in the literature. Check your results under this account. If you get different results, think about what could be the reason? Maybe the inaccuracy of the measurements? Indicate the strengths and weaknesses of the study (limitations). Certainly, the weak point is the lack of a standardized measuring tool. Edit your conclusions. You identified more variables related to joint pain than those indicated in the conclusion. References Check the correctness of the reference records - e.g. number 4

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1 **Dr. David Ellard, University of Warwick**		
Comment	**Author Response**	**Location in revised -clean version**
1. Firstly, and probably most importantly here is the lack of a clear definition of what is meant by Chronic pain. The abstract and the methods section states: “Chronic joint pain in our study was based on any self-reported symptoms of joint pain, stiffness and swelling lasting for more than 1 month in the past 12 months.” This does not accord with normal definitions of ‘chronic pain’ that usually state: “Chronic or persistent pain is pain that carries on for longer than 12 weeks despite medication or treatment.” Indeed, recently the WHO adopted the ICD-11 classification. Whilst I recognise that the survey was carried out before the ICD-11 definition was released the other definitions were in existence and not used.	Thank you for noticing this error. On reflection we agree that our definition of Chronic joint pain does not accord with normal or ICD-11 definitions which is pain lasting for more than ‘3 months’. We could have been more cautious when defining the Chronic joint pain. We have now corrected this error and replaced ‘chronic joint pain’ with ‘joint pain’ throughout the manuscript to be in line with our definitions.	Throughout the manuscript
2. I took the time to review the actual survey questions and to all extents and purposes most of the assumptions made are based on the respondent answering yes or no to one question in a survey that has many hundreds of questions. Answering YES to this question has been taken as a self-report that this person lives with chronic pain. But all it tells us is that they are saying that they have had this pain (that wasn’t an injury) for at least a month… nothing else is taken into account (e.g. other health conditions).		

This I feel is a major flaw in the figures reported. 3.Table one is a little misleading in that whilst the 'survey' sample is 5,593 this is not the chronic joint pain sample size the 'chronic joint pain' label spans both columns two and three. As noted in the abstract the chronic joint pain population in this survey was 17% of the 5,593. -	Thank you for pointing out this important issue. We agree that we based our assumptions made based on the respondents' answering yes or no to a question in a survey. We also agree that taking in account of other health conditions would have provided more context. But unfortunately, due to the nature of the data available, it was not feasible to consider other health conditions. However, the questionnaire we used was a validated WHO NCD STEPS questionnaire, and has been widely used in WHO member countries. We have now highlighted this issue in our limitations sections. Thank you for noticing this. We have now corrected this error in the manuscript.	Lines, 261-265 Table 1

Reviewer 2 **Dr. Agnieszka Ćwirlej-Sozańska**		
Comment	**Author Response**	**Location in revised clean MS**
Lines 23-26 – add secondary outcome	Thank you so much for your suggestion. We have now added the secondary outcome as follows: *"The secondary outcome measure was factors associated with joint pain in Nepal."*	23-24
Describe better the point "primary and secondary outcome measures"	Thank you. We have made the suggested change.	23
Results ??? – The text does not agree with the results in Table 1 that pain is most common among the richest and students	Thank you for noticing this error. We have rewritten the results as per your suggestion as follows: *higher prevalence for, lowest wealth quintile, homemaker ,*	29-31
Lines 42-49 – Please shorten the limitations	Thank you so much. We shorten the limitation as per your suggestion.	in table 39-0
The wording "... consultation behavior" in the abstract is unclear, as it has not been explained beforehand what the authors mean and how such a measurement was made	Thank you so much for raising this issue. Through carefully revision of the manuscript revision, The sentence has been deleted.	The sentence has been deleted
Kewords – think about the keywords, it would be worth choosing them more accurately, as well as that they should be different from the words in the title of the work.	Thank you for your suggestion. We have now made the changes as follows:	38

	Prevalence, non-communicable disease, joint pain, Nepal	
Lines 59-62 – add an additional article supporting the thesis on limitations, disability and more frequent incapacity to work of people with joint diseases, e.g. : DOI: 10.12659/MSM.904845.	We have now added an additional citation as suggested.	line 54, reference number 5
In the introduction, a paragraph should be added about what is known about sociodemographic and behavioral factors associated with joint pain.	We have added the known factors about sociodemographic and behavioral factors associated with joint pain in the introduction section	60-65
Methods Study design During what period was the study conducted?	 We have added study period as suggested.	83-84
Line 82 - Only information on NCD risk factors was collected in the study? The collected information should be related to the purpose of the study presented in the article. Describe it a bit more precisely.	Further information about the purpose of the study has been added as per your suggestion in the manuscript. Thank you	79-87
Line 81 - STEPS survey - it would be good to enter the full name of the survey the first time Sampling	Thank you so much for raising this issue .Acronyms have been spelled out the first time we used	19
Describe the sample size, the size of the measurement error and the confidence level. Provide the method of selecting the respondents. The authors gave a footnote, however, it would be good to include the basic information	As suggested by the reviewer, We have now clarified the sampling procedure – sample size, measurement error and CI in the manuscript; also we mentioned about the methods of selection of respondent in the survey.	94-100

Line 88 – enumerator or enumerators?	We have changed "enumerator" to *"enumerators* " as suggested	94
Outcomes Add secondary outcomes.	The secondary outcome has been added	103-104
Covariates How was the level of physical activity sufficient or inadequate determined? Describe it exactly. This is especially important as the results are contradictory.	We appreciate the reviewer' comments; we have now included measurement of physical activity level and described preciously in methodology section.	122-128
In order to work, you divide the factors into: demographic, socioeconomic, and behavioral factors. Assign the listed factors to each group. Data analysis: Describe bivariate and multivariable analyzes - for what purpose did you make these two models? Explain it carefully. Provide data describing the level of fit of the models.	Thank you for pointing this out. We have added the suggested content to the manuscript on the heading of data management and analysis	144-152
Table 1 - Standardize the record of the number of respondents - (n= 5,593) or n = 5593	Thank you! We have changed 5,593 to *5593* as suggested.	Table 1, 166
Table 1 – why was underweight not separated from normal weight?	We thank the reviewer for valuable feedback. We agree that it would have been helpful to separate underweight from normal weight. However, due to the small sample in these categories we merged them in our analysis. We have now clarified this in our methodology section of the manuscript.	128-133
Table 2 – only underweight appears, what about normal body weight? Below table 2 is a description:	We have added "normal "in the table 2 and made changes	Table 2, 192

„* p<0.05; ** p<0.01; *** p<0.001” – these designations were not used in the table	throughout the table as suggested.	
Table 2 - educational attainment - you get divergent results - using the two models creates a mess. Explain well in the methodology the sense of using two models. In the discussion, consider the differences that arise.	Thank you so much for raising this issue. We have clarified the sense of using of two statistical model in our study in the methods section.	144-152
Discussion Consider whether defining the study population "adult" is correct if you are testing people aged 15?	We thank the reviewer for this comment and corrected accordingly.	211
Lines 197-203 - Your analysis of the relationship between physical activity and joint pain is not satisfactory. First, in the methodology, you need to explain on what basis you determined your physical activity. Was it physical exercise or physical work? Well-planned physical activity has a protective effect on the joints - this is confirmed by numerous scientific studies, while joint overload related to work or competitive sports correlate with a greater frequency of pain problems. This fragment requires re-examination and re-description.	We thank the reviewer for this comment. While we observed little difference in the association of PA and joint pain therefore we have rewritten in the methodology and discussion section. Please also see the response to comment regarding Physical Activity above.	Methodological approach- 122-128 Discussion- 236-245
Lines 213-215 - verify your data in the table, it is worth analyzing underweight, norm, overweight and obesity separately. Underweight and obesity are associated with joint pain in the literature. Check your results under this account. If you get different results, think about what could be the	This has now been corrected and checked the result as suggested	128-133

reason? Maybe the inaccuracy of the measurements?		
Indicate the strengths and weaknesses of the study (limitations). Certainly, the weak point is the lack of a standardized measuring tool	This has now been added and corrected in the revised abstract and manuscript.	258-265
Edit your conclusions. You identified more variables related to joint pain than those indicated in the conclusion.	As suggested by the reviewer we have made changes in the conclusion section of the manuscript.	268-270
References Check the correctness of the reference records - e.g. number 4	Thank you for pointing this out. We corrected reference number 4	Reference 5, line 305 0

VERSION 2 – REVIEW

REVIEWER	Ellard, David University of Warwick, Clinical Trials Unit
REVIEW RETURNED	11-Aug-2021

GENERAL COMMENTS	Thank you for inviting me to review this revised manuscript. This is an important piece of work and the presented manuscript is now much improved. I wish the authors well with their future research.