PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Work-disability benefits due to musculoskeletal disorders among Brazilian private sector workers
AUTHORS	Vieira, Edgar; Barbosa-Branco, Anadergh; Oliveira, Paulo

VERSION 1 - REVIEW

REVIEWER	***Dr. Phil. Matthias Bethge*** Hannover Medical School Centre for Applied Rehabilitation Research Germany No competing interests.
REVIEW RETURNED	12-Nov-2010

THE STUDY	Please describe the HDI (including cut-offs for defining high, medium-high, medium-low; is it 0.9, 0.8 and 0.5?) and report the HDI values for the different states,
RESULTS & CONCLUSIONS	I have some minor remarks... 1) Please add mean rates of MSD-related benefits for each category of the HDI. 2) I didn't understand p9 line 55-58. For the discussion: The discussion should start with a summary of the results. The adverse effect of some job categories is likely confounded by other factors like SES, educational level and so on. Moreover, it is not appropriate to reduce this effect to an ergonomical challenge.
REPORTING & ETHICS	There is no comment on ethical approval.

REVIEWER	***Nearkasen Chau*** Research Director National institute for health and medical research France No competing interest.
REVIEW RETURNED	14-Nov-2010

GENERAL COMMENTS	BMJ Open Work-disability benefits due to musculoskeletal disorders among Brazilian private sector workers Vieira et al.

	The study is interesting on a large population. However, there are many issues to be considered. 1. Work-related and non-work-related MSD are very different in terms of causes and consequences. It is difficult to understand the figures provided in various Tables as the two types of MSD are mixed. The results are descriptive. It would be not clear to promote prevention programme with the statistics given. 2. Introduction: is very poor and does not well correspond to the results provided. 3. At the end of the abstract results section the authors consider the four most common MSD as injuries. The MSD as a type of disorders may refer more to disorders than to injuries which may rather be caused by accidents. Accidents and disorders are very different in terms of diseases and causes, and certain MSD may be chronic. In the discussion various sentences would consider more the disorders (and less the accidents). 4. The distinction between injuries and disorders is unclear as throughout the paper, the authors use the terms "musculoskeletal injuries" and "disorders". For example, an amputation of a limb or a shoulder crushed by a work accident are different from limb or shoulder disorders caused by some repetitive tasks. 5. Page 5: In the sentence "... recorded 105,514 MSD cases among Brazilian workers insured for work-related sickness and disability ..." the terms sickness and disability are different and may not be mixed. 6. Human development index: What is the rationale for giving the results according to it (Table 2) ? It seems that it is a composite index based on three indicators: longevity (as measured by life expectancy at birth, educational attainment, and standard living (gross domestic product per-capita). An interesting question may be whether a SCI causes the same (or not) the MSD (work and non-work separately) for various states or human development index levels? 7. Results section: There are very few commentaries for various figures in different Tables. 8. Statistical tests are lacking. 9. Table 2: It is necessary to state that the rate is per 10,000 workers/year. The abbreviations for Brazilian states should be given. The reference [14] refers to an internet site in Brazilian. Are the states ordered according the human development index in each category high, medium-high and medium-low? 10. Table 3: Why provide sex and age adjusted PR for work- and non-work related MSD combined only. Maybe replace sex adjusted PR by sex-age-adjusted PR. The footnote is complicate to read; maybe replace the SIC by their meaning and deleted the footnote. It would not be appropriate to compare each sector of economic activity to all the population because the last comprise each category. It would be better to choose a reference group. Furthermore, the rates may be adjusted for sex and age.

	11. The discussion begins with the sentence: "The nature of work tasks is likely related to MSD ..." while the tasks nor job category are not investigated in the study. 12. Wage (page 14): wage is mentioned with data not shown. The income is related to MSD because of several hazards: occupational activities but also obesity, lack of physical/sports activity, food, etc. This issue affects many jobs, especially manual workers, not only sewage workers. It is difficult to attribute to wage with type of job not included in the analysis. 13. Page 14, last paragraph: The authors state "But, young workers (<20 years old) had the highest variation. This may be explained by the healthy worker effect, where exposed persons who developed MSD may have left employment earlier in their careers. Thus, only workers who are genetically and/or physically less prone to develop MSD remain on the jobs". This would not be the only factor and may concern various age groups. The differences between states may be partly due to possible differences in economic activities, job categories, and characteristics of workers (age especially). So, the results in Table 2 would be better if they are also adjusted for sex, SIC, education and income (taken into account in human development index). Otherwise the interpretation is speculative. 14. Lower rate for the ages 60+ compared with the ages 50-59: Do this is partly due to possible retirement? i.e. one person, aged for example 65, left job for example in 1st July 2008, his work duration is 6 months only and not one year; consequently he had a lower risk of MSD. But, the subjects aged over 60 may also have reduced work and other daily living activities because of lower capacities and more risk awareness. 15. Page 15, 2nd paragraph: The authors state "Some States had up to 60% higher sex-adjusted, and up to 70% higher age-adjusted MSD-related benefits than the general population of Brazilian workers". Table 2 gives age-adjusted rate and one sentence in the results section concerns sex-adjusted rate. It may be more appropriate to adjust for all confounders considered: sex, age, SIC, etc. The economic activities greatly vary across the states. Also the proportion of employed people. 16. Page 15, 2nd paragraph: " The highest rates were found among the States with high Human Development Index, and the lowest rates were found among the States with medium-high Human Development Index. This is an interesting finding that indicates that higher rates are found among the most productive and populous areas ". This is not very interesting and new. Furthermore, life expectancy and education level (included in the Human Development Index) do not concern the production and the size of the population. The conclusion of the authors would be more possible when exploring the gross domestic product per-capita by adjusting for economic sector. Those factors are available in the study. 17. Page 16, 1st paragraph: The authors state " Complex interactions between work and home activities result in

	different exposures between men and women. These differences may help explain our findings". To study those interactions it would be interesting to calculate the proportion of men and women who cumulated work and non-work related MSD. 18. English: The paper is rather well written. But the English may need to be checked.

VERSION 2 - REVIEW

REVIEWER	***Prof Alex Burdorf*** Erasmus MC
REVIEW RETURNED	18-Jan-2011

THE STUDY	I am not convinced that 'rates' are informative without careful stratification of all elevant factors, i.e. age, gender, economic activity (thus, comparisons among states are rather useless) I have problems with the use of prevalance and rates! They do not go together.
RESULTS & CONCLUSIONS	But not very informative
GENERAL COMMENTS	Abstract 1. Make clear that it is primarily about temporary disability and define disability eligibility criteria (is is renumeration due to sickleave?) 2. Describe in a few words what the HDI entails 3. The term rate is incorrect for prevalence figures (rate = expression of occurrence over time) 4. The results on State/HDI and MSD suggest an ecological analysis, if so, please clearify Introduction 5. The 600.000 US workers on sickleave does not say much when the size of workforce is unknown. Please also present an expression with a denominator. The same is true for other figures. 6. Please note that prevelance of MSD and prevalence of disability/sickleave are two completely different measures. What is of interest which proportion of those with MSD take sickleave/become disabled. 7. The particular use of HDI and the objective of the study suggests that the authors are (also) interested in inequalities. This is not addressed in the analysis, since I was expected a measure such as the relative index of inequality for high vs low HDI across industry, or even within industries. Methods and results 8. Some information is required on criteria for work-related vs non-work-related disability. 9. I am troubled by the definition of prevalence and rate. Either it is disability rate, expressed by occurrence per person-years, or it is prevalence (proportion of workers with disability in a given year). Also, the prevalence rate ratio is an incorrect term. 10. I wonder whether the PRR (see also remark 9) is appropriate, since essentially this is an ecological analysis (group level). I would be much more interested in a measure of inequality, expressing the relative occurrence across HDI levels, preferably within comparable strata of industries. 11. The comparisons show that there are at least 3 crucial

	determinants: age, gender, and economic activity. Thus, differences among states cannot be interpreted without adjusting/standardisation for economic activity. Discussion 12. Statements like “studies should report exposure levels” are rather odd, given the analysis presented in the manuscript. 13. Overall, the authors should be very careful with inferences about work-related risk factors underlying the observed patterns at group level. Without detailed knowledge about job titles ad distribution within economic activity, most remarks are rather guess work. 14. Given the limited detail of the available information, I suggest the authors focus less possible associations with work load, and more on differences in occurrence across wealth/industry. Since this manuscript was obviously a revision, i do not know the previous remarks made by reviewers. All in all, I did not find very interesting scientific knowledge that would contribute to our understanding of disability patterns. I hesitate between the advice major revision and reject. i think the material on wealth and disability rates could be quite interesting, when presented more within the framework of socio-economic health inequalities

REVIEWER	***Lys Esther Rocha*** Faculty of Medicine University os São Paulo Brazil I do not have conflict of interests.
REVIEW RETURNED	19-Jan-2011

THE STUDY	Importance of Study: This study is important because the rates and the distribution of the MSD among Brazilian workers are not well Known. Comments: 1. Abstract-Page2 Methods: Two suggestions- 1- To specify that the prevalence was calculated by economic activity of the enterprise; 2- instead of category of benefit could be used relation with work. Conclusion: This phrase in page 2 is not clear: “There were also differences between the States…. Iniquities like Brazil”. The authors should comment that maybe the differences between the States are really more complex to be explained, not only related by HDI, but also because it depends on the productive process, political organization, socioeconomics characteristics, the system of register of the date, and the political capacity of workers as they described at the discussion. 2. Article Summary- Page 3 Key messages: It is written: “Significant differences between the rates among States …. . .. suggest the need of more in-depth evaluation of the contributive factors associated”….Which contributive factors may be associated? Maybe the authors should discuss: Observing the significant differences between the rates among States it is necessary to discuss the system of register because they are very different in the

	States. For example, Santa Catarina (page. 10) has the rate of MSD of 156,3 and probably the more accuracy system of register. 3. Article Summary- Page 3 Strength & Limitations of this study This phrase in page 3 is not clear : " Our findings may not be clear…. and may inform their design". How this study may inform about the prevention programs? As they said in the discussion the strength of this paper is that it contributes to the implementation of an occupational health policy to MSD. The limitations should describe that this paper only include the data only of workers registered by the enterprises and in Brazil there are a large number of workers out of the National Insurer (as the authors described in page 6). Other limitation is that this study depends on the quality of system information of the Ministry of Social Insurance. 4. Methods Brazilian policies on work absences due to health issues: In the first paragraph the authors said that "all Brazilian employees contribute with at least 9%...." However in the population they explain that approximately 40% of the economically active Brazilian population estimated in 99.500.202 are insured by National Insurer. So maybe should be better to say: "The employees registered in the private sector contribute…" In the second paragraph the authors should describe how the benefits are characterized and are registered as work-related or not, because it differs in each country and it changed in Brazil in 2007. They included the cases registered by CAT (Comunicação de Acidente de Trabalho-Comunication of Work´Accidents) or even the cases recognized by NTEP (Nexo Tecnico Epidemiológico-diseases that were not recognized by the enterprise as a work disease however due to high incidence among the workers from this kind of enterprise is considered by National Insurance as work related and registered) .
RESULTS & CONCLUSIONS	5. Results In page 9 is described: " Table 2 shows…..The gender-activity…" The gender-adjusted rates were not described at the table 2. In Table 3 there are the 22 economic activities of the enterprises with the highest rates of MSD benefits. Comparing with the literature maybe should be interesting include the rate about a) health services (hospitals and clinics) because it is one type of enterprise that is very common MSD and b) bank workers (financial activity economic) as it is mentioned in the introduction (ref.8) 6. Discussion The idea of the second paragraph in page 14 was not clear: "the nature of the work…. disorders" Regarding the discussion about economic activity of the enterprise of sewage what job characteristics should explain the rates? I agree that mixing public/private companies is important. As there are very few studies regarding the factors affecting disability for Programming workers in Brazil, would be interesting to see the article about systems analysts: Rocha & Debert-Ribeiro . Working conditions, visual fatigue and mental health among systems analysts in São Paulo, Brazil published by Occup Environ Medicine vol 61 (n1) 2004-p. 24-32. Regarding the workers from programming enterprises and broadcasting workers it should be discussed the capacity of recognize the diseases in their workplace, because they general have high level of education and good capacity of claim. Regarding the discussion about differences by State (Table 2) is necessary to point out the differences from the quality of information in each State: even at State with similarity about HID like SP, RJ, RS

	and SC the rates were very different.
GENERAL COMMENTS	Dear Authors, As National Insurer changed in 2007 the registered and recognized work-related disease it is very important that you explain it and define what you considered as work related accident in this study. You included the cases registered by CAT (Comunicação de Acidente de Trabalho-Comunication of Work´Accidents) or even the cases recognized by NTEP (Nexo Tecnico Epidemiológico-diseases that were not recognized by the enterprise as a work disease however due to high incidence among the workers from this kind of enterprise is considered by National Insurance as work related and registered)? Best regards, Lys

REVIEWER	***Cameron Mustard*** Senior Scientist Institute for Work & Health Canada
REVIEW RETURNED	23-Jan-2011

GENERAL COMMENTS	I understand I have been asked to review a revision of this manuscript. I did not review the original submission. Overall, the manuscript is a well-structured and clearly written descriptive report on the incidence of work disability episodes attributed to musculoskeletal disorders among Brazilian private sector workers. I have reviewed the two reviewers' comments on the original manuscript and the authors' response to these reviews. I am satisfied that the primary concerns raised by the original reviewers have been addressed by the authors.

VERSION 2 – AUTHOR RESPONSE

Response to second round reviewers

Reviewer #3 (R3) comments, and Authors' (Au) responses.

R3: I am not convinced that 'rates' are informative without careful stratification of all relevant factors, i.e. age, gender, economic activity (thus, comparisons among states are rather useless).

Au: We controlled for the variables mentioned and presented both findings on Table 2. The comparisons among states were made using the adjusted data.

R3: I have problems with the use of prevalence and rates! They do not go together.

Au: We revised the terminology and used only prevalence. We also replaced the term "prevalence rate ratio" with "prevalence ratio" to avoid any confusion.

R3: [RESULTS AND CONCLUSIONS] not very informative.

Au: The authors would be happy to respond to any specific comments or suggestions on how to improve these sections.

R3: Abstract
1. Make clear that it is primarily about temporary disability and define disability eligibility criteria (is is renumeration due to sickleave?)
2. Describe in a few words what the HDI entails
3. The term rate is incorrect for prevalence figures (rate = expression of occurrence over time)
4. The results on State/HDI and MSD suggest an ecological analysis, if so, please clearify

Au:
1 and 2. these are beyond the scope of the abstract given the limited number of words allowed in this section. We provided the descriptions on the manuscript text.
3. We used prevalence throughout the text.
4. We did not conduct an ecological analysis. We calculated the prevalence by HDI group and by MSD type.

Introduction
R3: 5. The 600.000 US workers on sickleave does not say much when the size of workforce is unknown. Please also present an expression with a denominator. The same is true for other figures.

Au: 5. We included a statement saying that the total US workforce is approximately 140 million.

R3: 6. Please note that prevelance of MSD and prevalence of disability/sickleave are two completely different measures. What is of interest which proportion of those with MSD take sickleave/become disabled.

Au: 6. Knowing which proportion of those with MSD take sickleave/become disabled is important. But, this study is about the prevalence of disability benefits due to MSD which is also important.

R3: 7. The particular use of HDI and the objective of the study suggests that the authors are (also) interested in inequalities. This is not addressed in the analysis, since I was expected a measure such as the relative index of inequality for high vs low HDI across industry, or even within industries.

Au: 7. We compared the states by HDI group. Given the trends observed we intend to do another study about the inequality issues specifically.

Methods and results
R3: 8. Some information is required on criteria for work-related vs non-work-related disability.

Au: 8. It was clarified on the methods section how the physician classifies the MSD. The MSD is diagnosed by an occupational physician using the ICD-10 code terminology. After 15 days of sickness absence, the worker makes a claim to the National Insurer. The claim is reviewed by an auditor physician who determines if the worker has work disability or not. Then the physician classifies the MSD as work or non work-related based on epidemiological evidence, evidence presented by the employer or employee, and patient/MSD history.

R3: 9. I am troubled by the definition of prevalence and rate. Either it is disability rate, expressed by occurrence per person-years, or it is prevalence (proportion of workers with disability in a given year). Also, the prevalence rate ratio is an incorrect term.

Au: 9. We revised and standardized the terminology to avoid any confusion. We replaced the term “prevalence rate ratio” with “prevalence ratio” to avoid any confusion.

R3: 10. I wonder whether the PRR (see also remark 9) is appropriate, since essentially this is an ecological analysis (group level). I would be much more interested in a measure of inequality, expressing the relative occurrence across HDI levels, preferably within comparable strata of industries.

Au: 10. We replaced the term “prevalence rate ratio” with “prevalence ratio” to avoid any confusion. A study of socio-economic health inequalities is a different study which we intend to conduct in the future.

R3: 11. The comparisons show that there are at least 3 crucial determinants: age, gender, and economic activity. Thus, differences among states cannot be interpreted without adjusting/standardisation for economic activity.

Au: 11. The prevalence among states was compared after adjusting for age, gender, and benefit type. In future we intend do another study comparing jobs within and across states, but this will require further data because currently we do not have information on specific job titles within the economic activities and job titles overlap across economic activities.

Discussion
R3: 12. Statements like “studies should report exposure levels” are rather odd, given the analysis presented in the manuscript.

Au: 12. The statement was removed.

R3: 13. Overall, the authors should be very careful with inferences about work-related risk factors underlying the observed patterns at group level. Without detailed knowledge about job titles ad distribution within economic activity, most remarks are rather guess work. Given the limited detail of the available information, I suggest the authors focus less possible associations with work load, and more on differences in occurrence across wealth/industry.

Au: 13. We discussed the findings in terms of potential explanations that need to be further evaluated in future studies.

R3: Since this manuscript was obviously a revision, i do not know the previous remarks made by reviewers. All in all, I did not find very interesting scientific knowledge that would contribute to our understanding of disability patterns. I hesitate between the advice major revision and reject. i think the material on wealth and disability rates could be quite interesting, when presented more within the framework of socio-economic health inequalities.

Au: Previous reviewers recommended the publication of the paper once the revisions requested were made. The three authors and four other reviewers did recognize the importance and scientific contribution of our work. That is an initial descriptive study of MSD-related benefits. A study of socio-economic health inequalities is a different study which we intend to conduct in the future.

Reviewer #4 (R4) comments, and Authors’ (Au) responses.

R4: Importance of Study: This study is important because the rates and the distribution of the MSD among Brazilian workers are not well Known.
R4: 1. Abstract-Methods: Two suggestions- 1- To specify that the prevalence was calculated by economic activity of the enterprise; 2- instead of category of benefit could be used relation with work.

Au: 1. Abstract-Methods: We clarified that the prevalence was calculated by gender, age, state, HDI, economic activity, MSD type, and work-relatedness.

R4: Abstract-Conclusion: This phrase in page 2 is not clear: “There were also differences between the States…. Iniquities like Brazil”. The authors should comment that maybe the differences between the States are really more complex to be explained, not only related by HDI, but also because it depends on the productive process, political organization, socioeconomics characteristics, the system of register of the date, and the political capacity of workers as they described at the discussion.

Au: Abstract-Conclusion: We revised the conclusion with the following statement: “This study demonstrates that further evaluation of the contributive factors associated with MSD-related disability benefits is required. Factors that should be considered include the productive processes, political organization, socioeconomic and educational characteristics, the compensation and recording systems, and employee-employer power relationships. These factors may play an important role on the prevalence of MSD-related disability benefits, especially in countries with large socioeconomic iniquities like Brazil.”

R4: 2. Article Summary- Page 3 Key messages: It is written: “Significant differences between the rates among States …. . .. suggest the need of more in-depth evaluation of the contributive factors associated”….Which contributive factors may be associated? Maybe the authors should discuss: Observing the significant differences between the rates among States it is necessary to discuss the system of register because they are very different in the States. For example, Santa Catarina (page. 10) has the rate of MSD of 156,3 and probably the more accuracy system of register.

Au: 2. Article Summary- Page 3 Key messages: We replaced it with the same statement presented on the abstract conclusion.

R4: 3. Article Summary- Page 3 Strength & Limitations of this study: This phrase in page 3 is not clear : “ Our findings may not be clear…. and may inform their design”. How this study may inform about the prevention programs? As they said in the discussion the strength of this paper is that it contributes to the implementation of an occupational health policy to MSD. The limitations should describe that this paper only include the data only of workers registered by the enterprises and in Brazil there are a large number of workers out of the National Insurer (as the authors described in page 6). Other limitation is that this study depends on the quality of system information of the Ministry of Social Insurance.

Au: 3. Thank you; we revised the statement following your suggestion.

Methods

R4: 4. Brazilian policies on work absences due to health issues: In the first paragraph the authors said that “all Brazilian employees contribute with at least 9%....” However in the population they explain that approximately 40% of the economically active Brazilian population estimated in 99.500.202 are insured by National Insurer. So maybe should be better to say: “The employees registered in the private sector contribute…”

Au: 3. Thank you, suggestion accepted.

R4: In the second paragraph the authors should describe how the benefits are characterized and are registered as work-related or not, because it differs in each country and it changed in Brazil in 2007. They included the cases registered by CAT (Comunicação de Acidente de Trabalho-Comunication of Work´Accidents) or even the cases recognized by NTEP (Nexo Tecnico Epidemiológico-diseases that

were not recognized by the enterprise as a work disease however due to high incidence among the workers from this kind of enterprise is considered by National Insurance as work related and registered) .

Au: Agreed. We have added to the text in methods section: “After 15 days of sickness absence, the worker makes a claim to the NI. The claim is reviewed by an auditor physician who determines if the worker has work disability or not. Then the physician classifies the MSD as work or non work-related based on epidemiological evidence, evidence presented by the employer or employee, and patient/MSD history.”

Results
R4: 5. In page 9 is described: “ Table 2 shows…..The gender-activity…” The gender-adjusted rates were not described at the table 2.

Au: 5. The gender-adjusted rates are presented on the last column of the table.

R4: In Table 3 there are the 22 economic activities of the enterprises with the highest rates of MSD benefits. Comparing with the literature maybe should be interesting include the rate about a) health services (hospitals and clinics) because it is one type of enterprise that is very common MSD and b) bank workers (financial activity economic) as it is mentioned in the introduction (ref.8)

Au: We agree with you; however, the only outstanding results in these two sectors occur among bank workers, and it is relate to the high characterization of work-related disability. The IRR between non work-related and work-related claims is only 1.17. High turnover in the banks may also contribute to decline the prevalence of MSD in this group.

Discussion
R4: 6. The idea of the second paragraph in page 14 was not clear: “the nature of the work…. disorders”

Au: 6. To make it clearer the paragraph was changed to “The demands of the work tasks within the industries are likely related to MSD among registered Brazilian private sector workers. MSD may occur when the musculoskeletal system is used beyond its physiological limits due to cumulative or single event exposures to one or multiple long lasting and/or excessive exertions. However, MSD are multifactorial in nature; genetics, morphology, and psychosocial characteristics, in addition to the biomechanical factors interact on the precipitation of these disorders.”

R4: Regarding the discussion about economic activity of the enterprise of sewage what job characteristics should explain the rates? I agree that mixing public/private companies is important.

Au: The following sentence has been added to the text: “Working in small, confined spaces and the heavy workload of sewage industry employees may contribute to the higher prevalence of MSD-related benefits among these workers than among most other economic activities.”

R4: As there are very few studies regarding the factors affecting disability for Programming workers in Brazil, would be interesting to see the article about systems analysts: Rocha & Debert-Ribeiro . Working conditions, visual fatigue and mental health among systems analysts in São Paulo, Brazil published by Occup Environ Medicine vol 61 (n1) 2004-p. 24-32.

Au: Thank you. We included the following statement. “It was fond that Brazilian systems analysts’ mental and physical health was affected by working conditions including workload, equipment, work environment, and workstation design, gender, and level of worker participation.”

R4: Regarding the workers from programming enterprises and broadcasting workers it should be discussed the capacity of recognize the diseases in their workplace, because they general have high level of education and good capacity of claim.

Au: That is right. We have added the following sentence in the text: “Other factors likely associated with the high prevalence of MSD-related benefits among Programming and Broadcasting workers are their higher level of education in comparison to most of the other occupational groups evaluated, their easier access to health care system due to higher wages, and possibly their increased capacity of claiming disability because of their educational levels and worker-employer relationships.”

R4: Regarding the discussion about differences by State (Table 2) is necessary to point out the differences from the quality of information in each State: even at State with similarity about HID like SP, RJ, RS and SC the rates were very different.

Au: The issues related to the quality of the data were highlighted in the discussion by the following statement: “Another issue that needs to be considered is that the quality of the data including the issues related to the reporting and recording from the different States and from the databases in general may have affected the results presented. These issues are common to all studies that carry out secondary analysis of pre-recorded data. However, the direction of these potential influences cannot be ascertained.”

R4: Dear Authors, As National Insurer changed in 2007 the registered and recognized work-related disease it is very important that you explain it and define what you considered as work related accident in this study. You included the cases registered by CAT (Comunicação de Acidente de Trabalho-Comunication of Work´Accidents) or even the cases recognized by NTEP (Nexo Tecnico Epidemiológico-diseases that were not recognized by the enterprise as a work disease however due to high incidence among the workers from this kind of enterprise is considered by National Insurance as work related and registered)?

Au: We have better defined the Work-related claims in the methods. Regarding to the changes in the Social Security way of charactering work-related benefit (NTEP) in 2007, the authors decided not to discuss it in deeps because we thought that the intricacies of the Brazilian Social Security System would not be of as much interest to the international audience of BMJ Open.
Reviewer #5 (R5) comments, and Authors’ (Au) responses.

R5: I understand I have been asked to review a revision of this manuscript. I did not review the original submission. Overall, the manuscript is a well-structured and clearly written descriptive report on the incidence of work disability episodes attributed to musculoskeletal disorders among Brazilian private sector workers. I have reviewed the two reviewers' comments on the original manuscript and the authors' response to these reviews. I am satisfied that the primary concerns raised by the original reviewers have been addressed by the authors.

Au: Thank you for reviewing our manuscript and verifying that the requested changes were made.

VERSION 3 - REVIEW

REVIEWER	***Lys Rocha***
REVIEW RETURNED	07-Apr-2011

RESULTS & CONCLUSIONS	Thank you very much for the authors that had made several modifications as I had just suggested.

	I only did not understand if they included the data from cases of Musculoskeletal disorders considering the epidemiological nexus or only the cases registered by the enterprises. Also, they did not talk about data from financial economic activity and hospital workers. These sectors had lot of claims by the workers related with musculoskeletal disorders.

REVIEWER	***Alex Burdof***
REVIEW RETURNED	22-Mar-2011

GENERAL COMMENTS	The authors have responded to a number of issues raised, but the introduction is still a mixture of different information. Since the study is on MSD disability benefits, I question why lines 34 to 46 are included. The prevalence of MSD complaints bears no information for MSD disability benefits, unless the manuscript presents information on the transitional probability from complaint to disability benefit. Also, in line 51 the authors state that "knowing the current MSD rates.." which is something else than disability benefits. I strongly suggest to delete this information from the introduction and scan the manuscript carefully for appropriate use of terminology. The paper should restrict itself to disability benefits and thus not discuss complaints as such.

VERSION 3 – AUTHOR RESPONSE

Reviewers' comments and authors' responses

Reviewer's Comments to Author:
Reviewer: Alex Burdorf, Erasmus MC, Department of Public Health
The authors have responded to a number of issues raised, but the introduction is still a mixture of different information. Since the study is on MSD disability benefits, I question why lines 34 to 46 are included. The prevalence of MSD complaints bears no information for MSD disability benefits, unless the manuscript presents information on the transitional probability from complaint to disability benefit. Also, in line 51 the authors state that "knowing the current MSD rates.." which is something else than disability benefits. I strongly suggest to delete this information from the introduction and scan the manuscript carefully for appropriate use of terminology. The paper should restrict itself to disability benefits and thus not discuss complaints as such.

Authors' Response:
Thank you, Dr Burdorf. You are right, that was indeed confusing. We revised the introduction and other parts of the manuscript, removed or revised the language not related to disability benefits such as MSD complaints to reflect what we evaluated. We also included the following statement early on in the discussion "It is important to mention that MSD-related benefits represent a fraction of the total MSD cases because just a minority of the cases result in disability claims. 'MSD-related benefits are just the top of the pyramid or iceberg".

Reviewer's Comments to Author:
Reviewer: Lys Esther Rocha, School of Medicine, University of São Paulo

Thank you very much for the authors that had made several modifications as I had just suggested. I only did not understand if they included the data from cases of Musculoskeletal disorders considering the epidemiological nexus or only the cases registered by the enterprises. Also, they did not talk about data from financial economic activity and hospital workers. These sectors had lot of claims by the workers related with musculoskeletal disorders.

Authors' Response:
Dear Lys, thank you again for helping us to improve our manuscript.
We evaluated all sickness benefits granted by the institute of social security; work-related is determined based on the epidemiological nexus as well as on the employer reporting (CAT). The data we analyzed included the work-related and the non work-related benefits granted, and sub-group analysis was conducted. In relation to the financial and health care workers, they were not within the groups with the highest rates of MSD-related benefits. We know that in practice this finding is suspicious; we think that this may be related to the use of some filters and/or recording issues created by employers in order to decrease the rates. However, we have no objective evidence of this fact since we only had access to secondary (pre-recorded) data, and due to this reason, we did not include this comment because it is speculative in nature. But, you are right, that is strange. In relation to health employees in particular, the lower rates than expected may be due to the early identification, easier access to medical attention and treatment of MSD symptoms among these professionals, so that the problems might have been "resolved" before 15 days, so they do not go on benefit. But again this is our speculation.