

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Impact of Activity-Limiting Injuries based on the Canadian National Population Health Survey 1994-2006
AUTHORS	Mo, Frank; Neutel, Ineke; Morrison, Howard; Hopkins, Doug; Da Silva, Caroline; Jiang, Ying

VERSION 1 - REVIEW

REVIEWER	Dr Nadine Andrew Research Fellow Translational Public Health Unit Stroke and Ageing Research Centre Monash University Australia
REVIEW RETURNED	23-Oct-2012

THE STUDY	<p>The objectives section needs to be reworded to clearly state the aims of the study with direct reference to the outcomes that were measured.</p> <p>The authors state that the study design is a “multiple cluster”. Please explain this in more detail. Is this referring to cluster sampling.</p> <p>It is not clear in the methods section how stress and depression were measured.</p> <p>In the abstract the study design is described as a randomised cohort study???</p> <p>Limitations should also include that the use of NPHS data meant that outcome measures relating to health status and function that had been validated in injury populations were not available for use in this study.</p> <p>Statistical analyses should include some type of trend analyses especially as this forms a large part of the results section (see section below).</p> <p>The authors need to proof read their manuscript for errors. Attention needs to be paid to sentence structure and correct grammar. In particular, the authors need to correct changes in</p>
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	past/present tense in the paper.
RESULTS & CONCLUSIONS	<p>Numbers of individuals at each stage should be reported. The authors need to be clear about how the total numbers reported in table 1 for each time point were derived. A flow chart would be a useful way of representing this.</p> <p>The authors spent much of the first paragraph of the results discussing changes in proportions over time for numerous variables. However, there is no information provided that demonstrates whether or not these changes are statistically significant. Appropriate trend analyses should be performed to address this.</p> <p>Tables 1-4: confidence intervals should be reported for the proportions in the tables. Report category boundaries for continuous variables in tables and all abbreviations should be defined.</p>
REPORTING & ETHICS	There is no mention of whether or not ethics approval was required or granted for this study.

REVIEWER	<p>Dr Sarah Derrett Injury Prevention Research Unit University of Otago New Zealand</p> <p>No competing interests.</p>
REVIEW RETURNED	29-Oct-2012

THE STUDY	<p>The research outlined in the paper is likely to be of interest to your readers. Unfortunately, I think the authors may have prematurely submitted their paper.</p> <p>There are too many errors of grammar and presentation throughout the paper to do justice to the research.</p> <p>There are a number of longitudinal studies with published results that are not referred to where relevant (e.g. R.A. Lyons' papers - but a good number of others also).</p> <p>I recommend the authors prepare the paper more fully and then resubmit.</p>
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REVIEWER	Bjarne Laursen, National Institute of Public health, University of Southern Denmark
REVIEW RETURNED	21-Nov-2012

THE STUDY	In general, the study design and time span should be more clearly described in the beginning. Only when reading the whole paper you
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	<p>may understand why the period was from 1994 and not from 1996.</p> <p>1) The start of the study cohort seems unclear. In line 33, there were 17,276 respondents (in cycle 1?), but in line 42+ the cohort started with the second cycle containing the same number (17,276). At page 8, line 16 “Data for the 1994 cycle were used only in this before and after analysis” – this indicates that the cohort actually started with cycle 1.</p> <p>2) How is the study population derived from the source population? There were 17,276 respondents in 1996/1997, but only 7,313 according to Table 1. A sample design is described referring to [14], but this seems to be the NPHS sampling and not the sampling of the 7,313 persons.</p> <p>3) The response rate is not clear. The presented response rates seem to be relative to those responding in cycle 1, but then we need to original response rate in cycle 1.</p> <p>p. 6 line 12 “For the present study, interview cycles for 1996 to 2006 were used.” I suggest changing this to e.g. “For the present study, interview cycles for 1996 to 2006 were used for ALI characteristics.”, since 1994 data are actually used for the other questions reported in Table 6, “before”</p> <p>p. 6 line 35 Background questions seem to include also immigrant status.</p> <p>p. 6 line 56+: “A three-part physical activity index..” this seems to be in conflict with line 40 “For this study the answers were dichotomized”</p> <p>The variable describing medical doctor visits is not described. The variable(s) describing alcohol consumption is not described. The variable describing stress is not described. The variable describing depression is not described. The variable(s) describing hospital treatment s (ED, admission) is not described.</p>
RESULTS & CONCLUSIONS	<p>p.8, line 28 “The number of ALI in adult Canadians increased from 755 cases..” This is the number in the study population only.</p> <p>p. 8 line 33 “The population is showing..” You probably mean “Those reporting ALI..” as this is what seems to be reported in Table 1. However, for comparison it would be interesting also to know the trends in the whole study population – they may be similar except for low income, where it must always be 50% by definition. Is it possible to have another table similar to Table 1 with this information?</p> <p>p. 8 line 38 “...of medical doctor (MD) visits decreased..” I think you mean “...of 5+ medical doctor (MD) visits decreased..”</p> <p>l. 40 “The two-thirds seeking medical care needed time, effort and know-how to negotiate the health care system...”. There are no data on this in the present study. Please provide a reference to this.</p> <p>p.14, line 47: “Population impact included loss of productivity of 10% of the most productive..” It may be true, but where does the information on productivity come from? There seems to be no information on ALI related to employment in the study.</p>

GENERAL COMMENTS

ABSTRACT

p.2 l.26 "Population impact included loss of productivity of 10% of the most productive.." There seems to be no results on productivity among.

p. 2, line 28: The reference group for the 20-39 years group should be mentioned

p.2 line 29 The OR are presented for selected years (and not the same). This selection seems to be biased, such that the years with the highest OR is chosen. If it is not possible to present a pooled mean, a fixed year, e.g. 2006 should be used.

SUMMARY BOXES

p. 3, line 6 "Long term effects in patients were ... stress...". There is not presented evidence for the effect on stress (before=after).

p. 3, line 7 "...loss of productivity of the 10% of the most productive.." This is not documented.

INTRODUCTION

p. 5 line 18 "from 1994 to 2006" : It seems to be from 1996 to 2006. There are no data on ALI in 1994.

METHODOLOGY

In general, the study design and time span should be more clearly described in the beginning. Only when reading the whole paper you may understand why the period was from 1994 and not from 1996.

1) The start of the study cohort seems unclear. In line 33, there were 17,276 respondents (in cycle 1?), but in line 42+ the cohort started with the second cycle containing the same number (17,276). At page 8, line 16 "Data for the 1994 cycle were used only in this before and after analysis" – this indicates that the cohort actually started with cycle 1.

2) How is the study population derived from the source population? There were 17,276 respondents in 1996/1997, but only 7,313 according to Table 1. A sample design is described referring to [14], but this seems to be the NPHS sampling and not the sampling of the

7,313 persons.

3) The response rate is not clear. The presented response rates seem to be relative to those responding in cycle 1, but then we need to original response rate in cycle 1.

p. 6 line 12 "For the present study, interview cycles for 1996 to 2006 were used." I suggest changing this to e.g. "For the present study, interview cycles for 1996 to 2006 were used for ALI characteristics.", since 1994 data are actually used for the other questions reported in Table 6, "before"

p. 6 line 35 Background questions seem to include also immigrant status.

p. 6 line 56+: "A three-part physical activity index.." this seems to be in conflict with line 40 "For this study the answers were dichotomized"

The variable describing medical doctor visits is not described.

The variable(s) describing alcohol consumption is not described.

The variable describing stress is not described.

The variable describing depression is not described.

The variable(s) describing hospital treatment s (ED, admission) is not described.

RESULTS

p.8, line 28 "The number of ALI in adult Canadians increased from 755 cases.." This is the number in the study population only.

p. 8 line 33 "The population is showing.." You probably mean "Those reporting ALI.." as this is what seems to be reported in Table 1. However, for comparison it would be interesting also to know the trends in the whole study population – they may be similar except for low income, where it must always be 50% by definition. Is it possible to have another table similar to Table 1 with this information?

p. 8 line 38 "...of medical doctor (MD) visits decreased.." I think you mean "...of 5+ medical doctor (MD) visits decreased.."

DISCUSSION

p. 13, line 14: The number of traffic fatalities seems wrong. During 2000-2005 it was about 45,000, and the goal for 2010 was 25.000 - however this was not obtained. Please give the year for the reported number.

CONCLUSION

I. 40 "The two-thirds seeking medical care needed time, effort and know-how to negotiate the health care system...". There are no data on this in the present study. Please provide a reference to this.

p.14, line 47: "Population impact included loss of productivity of 10% of the most productive.." It may be true, but where does the information on productivity come from? There seems to be no information on ALI related to employment in the study.

Table 1

I. 6 Title: "1994-2006" should be "1996-2006" – no data from 1994 are presented here.

I. 18 Low income: The reported numbers are far below 50% indicating a much higher incidence of ALI among those with high income. However, according to Table 5 the incidence is higher among those with low income. Is this difference explained by age and sex adjustment?

I. 40 Please spell "Ltd" as Limited.

I. 40-49 : there are varying numbers of decimals in the numbers "38" , "26.64", "25.09", "70.23"

I. 41 "Health status" should probably be "Poor health status"

I. 48 "...in last 30 years" should be "..in last 30 days"

Table 2.

I. 6 "1994-2006" should be "2000-2006" (then the footnote is not

	<p>needed)</p> <p>I. 11, 20, 29, 38, 47: It would be more logical if the row “None” was moved to below “Any”.</p> <p>I. 13. “Medical Doctor (MD) visits” should be “5+ Medical Doctor visits/year” as in Table 1.</p> <p>Table 3 need some explanation. E.g. how can an injury be both “activity limiting” and “non-activity limiting”? Due to the methods section, only activity-limiting injuries were reported.</p> <p>Table 4</p> <p>I. 6 “1994-2006” should be “1996-2006”</p> <p>Table 5</p> <p>I. 8 “1994-2006” should be “1996-2006”</p> <p>I. 30/31 Why are 0.7 (0.6-0.9), 0.6 (0.5-0.8) , 0.8 (0.7-0.9), and 0.7 (0.6-0.9) not significant? See also line 38</p> <p>How are the confidence intervals rounded? It seems surprising that all intervals ending in 1.0 are reported as non-significant.</p> <p>If there is no interaction with year, a pooled analysis including all years would be useful although possibly complicated due to population overlap between the years.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: Dr Nadine Andrew

Research Fellow
 Translational Public Health Unit
 Stroke and Ageing Research Centre
 Monash University
 Australia

1. The objectives section needs to be reworded to clearly state the aims of the study with direct reference to the outcomes that were measured.

Res: Right! We modified the description of objectives in order to meet with the outcomes of the study.

2. The authors state that the study design is a “multiple cluster”. Please explain this in more detail. Is this referring to cluster sampling.

Res: You are right. NPHS study is a “multiple clusters” design and this is referring to multiple clusters sampling in each province and territory. The sampling size in each cluster was included about 300 participants.

3. It is not clear in the methods section how stress and depression were measured.

Res: Thank you! We added the definition and measurement in the methods section.

4. In the abstract the study design is described as a randomised cohort study???

Limitations should also include that the use of NPHS data meant that outcome measures relating to health status and function that had been validated in injury populations were not available for use in this study.

Res: Yes, this is a randomised cohort study. We also included your suggested description in the limitation section, Thank you!

5. Statistical analyses should include some type of trend analyses especially as this forms a large part of the results section (see section below).

Res: Descriptive statistical analyses have been done in table 1 to table 4 from 1996 to 2006 with numbers and percentage for all outcomes in this study.

6. The authors need to proof read their manuscript for errors. Attention needs to be paid to sentence structure and correct grammar. In particular, the authors need to correct changes in past/present tense in the paper.

Res: Thank you, we checked carefully in writing and grammar, and changed all incorrect statements.

7. Numbers of individuals at each stage should be reported. The authors need to be clear about how the total numbers reported in table 1 for each time point were derived. A flow chart would be a useful way of representing this.

Res: Thank you for the question. We changed the total number to ALL characteristics of number in study population on the foot notes, and corrected the decimal numbers. We tried to use a flow chart to replace table 1, however, the trend of ALI seems not distinguish by time, so we simply use a table to show the results.

8. The authors spent much of the first paragraph of the results discussing changes in proportions over time for numerous variables. However, there is no information provided that demonstrates whether or not these changes are statistically significant. Appropriate trend analyses should be performed to address this.

Res: Correct. All outcomes from table 1 to table 4 are the results from descriptive statistical analyses, we could only provide numbers and weighted rates. In table 5 and table 6, after logistic regression analyses, statistically significant differences were showed in table 5-6.

9. Tables 1-4: confidence intervals should be reported for the proportions in the tables. Report category boundaries for continuous variables in tables and all abbreviations should be defined.

Res: Good suggestion. In the table 1-4, we cited only numbers and percentages without confidence intervals. But the ORs, 95% CI and P-values were showed in table 5-6 for multi-variance estimate.

10. There is no mention of whether or not ethics approval was required or granted for this study.

Res: Thank you, we added ethics approval statement in the methods section.

Reviewer: Dr Sarah Derrett
Injury Prevention Research Unit
University of Otago

New Zealand

No competing interests.

The research outlined in the paper is likely to be of interest to your readers.

1. There are many errors of grammar and presentation throughout the paper to do justice to the research.

Res: Thank you, this is done.

2. There are a number of longitudinal studies with published results that are not referred to where relevant (e.g. R.A. Lyons' papers - but a good number of others also).

Res: Good comments. We already added 6 more references in this study.

Reviewer: Bjarne Laursen, National Institute of Public health, University of Southern Denmark

ABSTRACT

p.2 l.26 "Population impact included loss of productivity of 10% of the most productive.." There seems to be no results on productivity among.

p. 2, line 28: The reference group for the 20-39 years group should be mentioned

p.2 line 29 The OR are presented for selected years (and not the same). This selection seems to be biased, such that the years with the highest OR is chosen. If it is not possible to present a pooled mean, a fixed year, e.g. 2006 should be used.

Res: 1)You are right. We deleted of 10% of the most productive...; 2)the reference group for the 20-39 years group is 60+ age group; 3)the ORs are resulted from a multivariate analyses, when there are statistically significant difference in comparing with control group, we noted it with a "*". So, we think that is not a problem of selection bias.

SUMMARY BOXES

p. 3, line 6 "Long term effects in patients were ... stress...". There is not presented evidence for the effect on stress (before=after).

p. 3, line 7 "...loss of productivity of the 10% of the most productive.." This is not documented.

INTRODUCTION

p. 5 line 18 "from 1994 to 2006" : It seems to be from 1996 to 2006. There are no data on ALI in 1994.

Res: 1) we deleted "stress"; 2) deleted 10% of the most productive.."; 3)you are right, only in table-6, we have data in 1994 in compared to each later year.

METHODOLOGY

In general, the study design and time span should be more clearly described in the beginning. Only when reading the whole paper you may understand why the period was from 1994 and not from 1996.

Res: Good question, we have already changed it.

1) The start of the study cohort seems unclear. In line 33, there were 17,276 respondents (in cycle 1?), but in line 42+ the cohort started with the second cycle containing the same number (17,276). At page 8, line 16 "Data for the 1994 cycle were used only in this before and after analysis" – this indicates that the cohort actually started with cycle 1.

Res: This is changed.

2) How is the study population derived from the source population? There were 17,276 respondents in 1996/1997, but only 7,313 according to Table 1. A sample design is described referring to [14], but this seems to be the NPHS sampling and not the sampling of the 7,313 persons.

Res: The study population are 17,276 respondents in 1996/1997. The 7,313 according in table-1 is only the numbers of ALI characteristics in study population.

3) The response rate is not clear. The presented response rates seem to be relative to those responding in cycle 1, but then we need to original response rate in cycle 1.

p. 6 line 12 "For the present study, interview cycles for 1996 to 2006 were used." I suggest changing this to e.g. "For the present study, interview cycles for 1996 to 2006 were used for ALI characteristics.", since 1994 data are actually used for the other questions reported in Table 6, "before"

p. 6 line 35 Background questions seem to include also immigrant status.

p. 6 line 56+: "A three-part physical activity index.." this seems to be in conflict with line 40 "For this study the answers were dichotomized"

The variable describing medical doctor visits is not described.

The variable(s) describing alcohol consumption is not described.

The variable describing stress is not described.

The variable describing depression is not described.

The variable(s) describing hospital treatment s (ED, admission) is not described.

Res: NPHS is a longitudinal cohort study, its original response rate in first cycle was 83.6%. However, after cycle one, there might have some new participants included in the next cycle. So, the rates in the next cycles were related to the first one. Other relative problems are changed.

RESULTS

p.8, line 28 "The number of ALI in adult Canadians increased from 755 cases.." This is the number in the study population only.

p. 8 line 33 "The population is showing.." You probably mean "Those reporting ALI.." as this is what seems to be reported in Table 1. However, for comparison it would be interesting also to know the trends in the whole study population – they may be similar except for low income, where it must always be 50% by definition. Is it possible to have another table similar to Table 1 with this information?

p. 8 line 38 "...of medical doctor (MD) visits decreased.." I think you mean "...of 5+ medical doctor (MD) visits decreased.."

Res: Thank you! This is done.

DISCUSSION

p. 13, line 14: The number of traffic fatalities seems wrong. During 2000-2005 it was about 45,000, and the goal for 2010 was 25.000 - however this was not obtained. Please give the year for the reported number.

Res: Mistake is corrected. Thank you!

CONCLUSION

I. 40 "The two-thirds seeking medical care needed time, effort and know-how to negotiate the

health care system...". There are no data on this in the present study. Please provide a reference to this.

p.14, line 47: "Population impact included loss of productivity of 10% of the most productive.." It may be true, but where does the information on productivity come from? There seems to be no information on ALI related to employment in the study.

Res: Good question! We have changed the descriptions.

Table 1

l. 6 Title: "1994-2006" should be "1996-2006" – no data from 1994 are presented here.

l. 18 Low income: The reported numbers are far below 50% indicating a much higher incidence of ALI among those with high income. However, according to Table 5 the incidence is higher among those with low income. Is this difference explained by age and sex adjustment?

l. 40 Please spell "Ltd" as Limited.

l. 40-49 : there are varying numbers of decimals in the numbers "38" , "26.64" , "25.09" , "70.23"

l. 41 "Health status" should probably be "Poor health status"

l. 48 "...in last 30 years" should be "...in last 30 days"

Res: These have been changed.

Table 2.

l. 6 "1994-2006" should be "2000-2006" (then the footnote is not needed)

l. 11, 20, 29, 38, 47: It would be more logical if the row "None" was moved to below "Any".

l. 13. "Medical Doctor (MD) visits" should be "5+ Medical Doctor visits/year" as in Table 1.

Res: Done.

Table 3 need some explanation. E.g. how can an injury be both "activity limiting" and "non-activity limiting"? Due to the methods section, only activity-limiting injuries were reported.

Res: Done.

Table 4

l. 6 "1994-2006" should be "1996-2006"

Res: Changed.

Table 5

l. 8 "1994-2006" should be "1996-2006"

l. 30/31 Why are 0.7 (0.6-0.9), 0.6 (0.5-0.8) , 0.8 (0.7-0.9), and 0.7 (0.6-0.9) not significant? See also line 38

How are the confidence intervals rounded? It seems surprising that all intervals ending in 1.0 are reported as non-significant.

If there is no interaction with year, a pooled analysis including all years would be useful although possibly complicated due to population overlap between the years.

Res: Thank you for the excellent questions. W rechecked the analyses and changed some ORs and 95% CI.

VERSION 2 – REVIEW

REVIEWER	Dr Nadine Andrew Research Fellow Translational Public Health Unit Stroke and Ageing Research Centre Monash University Australia I have no competing interests
REVIEW RETURNED	17-Jan-2013

THE STUDY	An appropriate form of trend analysis should be performed to assess changes in variable over time.
RESULTS & CONCLUSIONS	The authors have discussed trends associated with activity limiting injuries without performing the appropriate statistical analyses to warrant these conclusions.
GENERAL COMMENTS	<p>This is a much improved version of the manuscript. The authors have addressed the majority of concerns raised in my initial review of the paper. However there are still a few outstanding issues. In the results section the authors discuss increasing trends associated with a number of variables reported in table 1. As mentioned previously there are sufficient time points available to perform a trend analyses and report significance levels for each of the variables across the 6 time points. There needs to be some statistical justification for reporting that there were increasing/decreasing trends for variables such as obesity and poor health status and not for variables such as inactive. The inclusion of p-values, p-trend or some other appropriate measure of statistical significance when discussing changes over time would strengthen the results.</p> <p>The title of table 1 also needs to be reworded to make it clear that in this table the characteristics of those that reported activity limiting injuries are described not just the proportion of Canadians that reported ALIs.</p>

REVIEWER	Bjarne Laursen Researcher, National Institute of Public Health, University of Southern Denmark, Denmark I have no competing interests.
REVIEW RETURNED	14-Jan-2013

- The reviewer completed the checklist but made no further comments.

VERSION 2 – AUTHOR RESPONSE

Responses to Reviewers:

Reviewer(s)' Comments: This is a much improved version of the manuscript. The authors have addressed the majority of concerns raised in my initial review of the paper. However there are still a few outstanding issues.

In the results section the authors discuss increasing trends associated with a number of variables reported in table 1. As mentioned previously there are sufficient time points available to perform a trend analyses and report significance levels for each of the variables across the 6 time points. There needs to be some statistical justification for reporting that there were increasing/decreasing trends for variables such as obesity and poor health status and not for variables such as inactive. The inclusion of p-values, p-trend or some other appropriate measure of statistical significance when discussing changes over time would strengthen the results.

The title of table 1 also needs to be reworded to make it clear that in this table the characteristics of those that reported activity limiting injuries are described not just the proportion of Canadians that reported ALIs.

Authors' response: We are very thankful to these favorable comments and good questions of our manuscript. In the Table 1, Univariate Analyses and P-value were used to compare the trend of ALI between 1996 and 2006 in the different characteristics in the NPHS data, especially for the variables limited activity, poor health status, obese, pain, heavy alcohol drinking, and medication use in the last 30 days. Others multivariate analytical results were presented in Tables 5 and 6, to compare the significant differences before and after ALI related to obesity, health and socioeconomic status.

We also revised the title in table 1 to make it clearer in the characteristics of Canadians that reported an activity limiting injuries.