PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (see an example) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Factors predicting work status three months after injury: results from the Prospective Outcome of Injury Study
AUTHORS	Rebbecca Lilley, Gabrielle Davie, Shanthi Ameratunga and Sarah Derrett

VERSION 1 - REVIEW

REVIEWER	Dr. Vicki Kristman Assistant Professor Department of Health Sciences Lakehead University Thunder Bay, Ontario Canada I declare that I do know the first author, Dr. Rebbecca Lilley. She was a student in the CIHR Work Disability Prevention training program offered through the University of Toronto. I was a co-instructor for one of the sessions she completed on Ethics in Work Disability Prevention.
REVIEW RETURNED	20/12/2011

THE STUDY	1)Methods, Study setting, page 4: Inclusion and exclusion criteria need further specification. If all the subjects are successful claimants, are there any factors that may deny a claim being successful that could be related to return to work? This requires clarification to ensure selection bias does not influence the results.
GENERAL COMMENTS	Major concerns 1) Methods, Study setting, page 4: If all the subjects are successful claimants, are there any factors that may deny a claim being successful that could be related to return to work? This requires clarification to ensure selection bias does not influence the results. 2) Methods, Data collection and explanatory variables, page 5: "All explanatory variables are pre-injury measures", but it is important to highlight that they are measured post-injury. As mentioned in the limitations section on page 25 there is the potential for recall bias where those who have not returned to work might respond to the pre-injury measures differently than those who have. Although it was stated that "few of the pre-injury variables examined in this analysis are likely to be influenced by their status at the time of the interview", it is possible that psychosocial factors could be susceptible. For example, a worker who may have had poor pre-injury job satisfaction may not recall this if he or she had a great return to work experience. Could this explain the lack of psychosocial factors as predictors? 3) Methods, Data collection and explanatory variables, page 5: In

	addition to the seven dimensions described, do you have any information on compensation system related factors, such as involvement of a lawyer, etc. Involvement of a lawyer has been shown to delay return to work and could be a potentially important predictor, if that information is available.
	4) Methods, Data analysis, page 7: As the goal of this manuscript is to essentially develop a prediction equation, it is important to provide the reader with prediction equation statistics in addition to just discrimination (area under ROC curve). The reader also needs to know how much of the variance in the outcome is explained by the model (R-square) and the ability of the model to predict the outcome (c-index).
	5) Table 2: Were all potential confounders in the model assessed for their true confounding effects? If so, how was this done?
	Minor concerns 1) Table 2, Model 5: Rows are out of place for alcohol consumption and overall self-assessment of health

REVIEWER	Greg Murphy LaTrobe University
REVIEW RETURNED	19/01/2012

GENERAL COMMENTS	This is a soundly designed study whose results were appropriately analysed. Some minor issues I noted were as follows: (i) Reference details for Tape (24) incomplete. (ii)I think that some of the initial "results" (i.e., those detailing participant charactersitics) would be better presented in the Methods section, under Participants/subjects. (iii) In the Discussion, I would have expected to read more about those findings that did not support the conventional wisdom about such factors as Job Support. (iv) In the paragraphs on study limitations, I would have expected to see reference to the limitations of using single-item scales for constructs such as Optimism, Job satisfaction etc.. (v) Discussion of the reliability of the study outcome variable seems warranted. There are obvious potential limitations to a self-reported work status provided at three months post injury.

VERSION 1 – AUTHOR RESPONSE

Reviewer 1 - Dr Vicki Kristman

Major Concerns
1)Methods, Study setting, page 4: Inclusion and exclusion criteria need further specification. If all the subjects are successful claimants, are there any factors that may deny a claim being successful that could be related to return to work? This requires clarification to ensure selection bias does not influence the results.

Response: We have added the following two pieces to Methods, Study setting, pg 5 to clarify who was eligible for the study:

"People were not eligible to participate if their injury was the result of self-harm, or if their injury

resulted in their being placed on ACC's sensitive claims register (e.g. sexual assault)."
And:
" Each year there are approximately 1.75 million injuries claims in New Zealand.21 Of these, 7% are placed on an entitlement claims register because they are likely to require more than simple medical treatment."
Reference 21 – Accident Compensation Corporation. 2009 Annual Report. Accident Compensation Corporation, Wellington, NZ.

2) Methods, Data collection and explanatory variables, page 5: "All explanatory variables are pre-injury measures", but it is important to highlight that they are measured post-injury. As mentioned in the limitations section on page 25 there is the potential for recall bias where those who have not returned to work might respond to the pre-injury measures differently than those who have. Although it was stated that "few of the pre-injury variables examined in this analysis are likely to be influenced by their status at the time of the interview", it is possible that psychosocial factors could be susceptible. For example, a worker who may have had poor pre-injury job satisfaction may not recall this if he or she had a great return to work experience. Could this explain the lack of psychosocial factors as predictors?

Response: We have made explicit the (necessary) retrospective collection of baseline data as follows:
Methods, Data Collection, 2nd paragraph, pg 6 "All explanatory variables are pre-injury measures retrospectively collected at the 3 month interview, with the exception of the injury-related variables which relate to the injury event itself."
Additionally, we have altered the limitations section of the manuscript (contained within the Discussion, paragraph 9, pg 27) to address limitations associated with possible recall bias of psychosocial variables:
"The exception to this are the psychosocial factors that may be subject to recall bias. If so, this could also have contributed to lack of relationship between psychosocial factors and not working following injury."

3) Methods, Data collection and explanatory variables, page 5: In addition to the seven dimensions described, do you have any information on compensation system related factors, such as involvement of a lawyer, etc. Involvement of a lawyer has been shown to delay return to work and could be a potentially important predictor, if that information is available.

Response: New Zealand's accident insurance scheme (known as the ACC scheme) is a universal, non-tortious, no-fault scheme that covers New Zealand's entire population. Therefore, the ACC scheme does not allow for litigation, other than for exemplary damages (extremely rare). Therefore there is NO involvement of lawyers in ACC claims. Claimants are able to dispute ACC decisions with up to 4% of claimants entering the dispute process. This is low compared with other schemes, such as Australia where up to 9% of claim decisions are disputed by claimants. Dispute data is not available for this analysis. To aid reader understanding of the New Zealand ACC scheme the non-tortious element of the scheme has been added to the manuscript Methods, Study setting, pg 5:
"The Prospective Outcomes of Injury Study (POIS) cohort was recruited via New Zealand's no-fault, non-tortious ACC scheme."

To clarify that there may be injured people not included in our study because they were not part of the ACC scheme we have added a sentence to the beginning of the Discussion's 2nd-to-last paragraph, pg 28:
"Recruiting participants, via the universal, no-fault, ACC scheme means does not allow us to examine work status outcomes in relation to whether or not people were granted access to ACC. There may be injured New Zealanders, not included in our study, who did not access medical support from a health

professional for their injury (a necessary requirement to become registered with ACC), or, who were not referred to ACC by a health professional."

However, it is also a strength of our study that participants were recruited from such a non-tortious scheme. Therefore, the following information has been added to the Discussion 3rd-to-last paragraph, pg 27:
"However, the no-fault nature of ACC is a strength of our study. In other injury-compensation systems, where people are required to litigate to gain access to compensation following injury, incentives may exist such that injured people would be ill-advised to return to work prior to their legal case for compensation coming before the court".

4) Methods, Data analysis, page 7: As the goal of this manuscript is to essentially develop a prediction equation, it is important to provide the reader with prediction equation statistics in addition to just discrimination (area under ROC curve). The reader also needs to know how much of the variance in the outcome is explained by the model (R-square) and the ability of the model to predict the outcome (c-index).

Response: The reviewer has assumed our aim was to develop a prediction equation for future application to other populations. This was not the case. Our objective was to examine variables that are associated with not working following injury. However, we have included the pseudo R-square value for our final model in our manuscript. The following has been included in the Results, final paragraph, pg 21 "The pseudo R2 was 0.1533."

5) Table 2: Were all potential confounders in the model assessed for their true confounding effects? If so, how was this done?

Response: Our confounders were established a-priori based on previous literature as potential confounders and have been included without assessing the direction or impact of the confounding.

Minor concerns
1) Table 2, Model 5: Rows are out of place for alcohol consumption and overall self-assessment of health

Response: Rows have been aligned.

Reviewer 2 - Professor Greg Murphy

This is a soundly designed study whose results were appropriately analysed. Some minor issues I noted were as follows:
(i) Reference details for Tape (24) incomplete.

Response: reference has been completed.

(ii)I think that some of the initial "results" (i.e., those detailing participant characteristics) would be better presented in the Methods section, under Participants/subjects.

Response: The first paragraph of the results have been shifted to Methods, Data collection & variables, Pg 6 as suggested by reviewer.

(iii) In the Discussion, I would have expected to read more about those findings that did not support the conventional wisdom about such factors as Job Support.

Response: An additional sentence has been added addressing this reviewer's expectation of more discussion of our lack of findings on the psychosocial variables. Discussion, paragraph 1, pg 21:
" Our study simultaneously controlled for a broader range of determinants than have previously been investigated by researchers examining the association between psychosocial variables and work status, and this may offer one explanation why there was a lack of association between psychosocial factors and work status in our study."

Furthermore, additional discussion of these variables has been added to the Discussion, Strengths & Limitations, 2nd to last paragraph, pg 26, addressing the concerns of Dr Kristman, point 2 as detailed above.

(iv) In the paragraphs on study limitations, I would have expected to see reference to the limitations of using single-item scales for constructs such as Optimism, Job satisfaction etc.

Response: The following has been added to the Discussion, 2nd to last paragraph, pg 25:
"The use of single item measures for some psychological constructs, such as job satisfaction and optimism, is a potential limitation to this study. However, parsimonious single item measures have been found to demonstrate good reliability and validity. Furthermore, we were concerned to minimise participant burden (the interview took 60 minutes to complete). "

(v) Discussion of the reliability of the study outcome variable seems warranted. There are obvious potential limitations to a self-reported work status provided at three months post injury.

RL: The following has been added to the Discussion, 2nd to last paragraph, pg 27.
"Recall of the baseline pre-injury work status at the 3 month interview may be subject to recall bias. However, verification of employment status with ACC claims records indicates the likelihood of this is low with 1% of participants having a non-concordant employment status between the self-reported and claims record data."

Other changes:
1) We originally provided the acronym for the Accident Compensation Corporation – ACC – in the first sentence of paragraph 3 in the Background to the paper. Inadvertently, we had not used the acronym in a number of places after that. We have now corrected this and replaced 'Accident Compensation corporation' with 'ACC'.
2) We have re-structured the second sentence of the second paragraph in the Background to clarify the meaning.
3) Two typographic errors were found in the references. References 8 & 31 have had errors corrected.
4) Reference 23 (previously reference 22) has now been published. This reference is now updated to present these details.

I look forward to receiving the outcome of your consideration of our manuscript revisions.

Kind regards

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