Author's response to reviews

Title: Patterns, aetiology and risk factors of intimate partner violence-related injuries to head, neck and face in Chinese women: A retrospective study

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Author's response to reviews: see over
20 October 2013

Emily Crow
Executive Editor

BMC Women's Health
BioMed Central
Floor 6, 236 Gray's Inn Road
London, WC1X 8HL

Dear Miss Crow,

Re: Resubmission of Manuscript

On behalf of my research team, I would like to thank for the opportunity to revise and resubmit our manuscript entitled “Patterns, aetiology and risk factors of intimate partner violence-related injuries to head, neck and face in Chinese women: A retrospective study”. Please find attached for the point-by-point responses to reviewers.

Thank you very much for your considerations.

Yours sincerely,

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This 21 page manuscript describes in some details the location and means of head neck and face injuries in female victims of intimate partner violence in Hong Kong emergency rooms. There is some interesting detail that may be of value to clinical practice.

Response: We thank reviewer for the positive feedback.

1. The question posed by the authors is not well defined. They raise the question of comparing Chinese and Caucasian victims but they cannot actually accomplish this comparison in their study. The literature to which the present results are compared includes ethnically diverse samples, not just Caucasian women. Some research has also compared IPV and non-IPV injuries, which is an advance over the present study. Therefore, I recommend that the authors identify a unique aspect of their study that answers a question that needs addressing in the literature and provide a strong rationale on that basis.

Response: This study doesn’t aim at directly comparing the situation between Caucasian women and Chinese women. Instead it aims at examining (1) the patterns of HNF injuries presenting to Accident and Emergency departments (AEDs), including the anatomical regions, types, severity, aetiology and (2) the risk factors of injuries caused by intimate partners in Chinese women in Hong Kong. The rationale is that there are no such data in Chinese available in existing literature. Specifically, the meta-analysis (Wu et al, 2010) did not reveal any studies involving the Chinese population. Also, information about age, socioeconomic status, and ethnicity were not fully reported in the previous studies by using chart review. This motivated us to conduct the present study. However, we discussed our findings from an ethnic Chinese sample with other studies which examined other ethnic groups in the discussion section. We have revised out Introduction section to make clear that we do not aim to compare Chinese and Caucasian victims, because as the reviewer has correctly commented that it cannot be accomplished in this study.

2. The methods seem appropriate but more description is required. Please clarify whether the 223 eligible cases were identified from one or both of the databases. Please provide an indication of the inter-rater reliability of the coding tool. Please say more about the shortcomings of the accuracy and integrity of the data abstracted - this should be raised in the method section. Please provide the rationale for selecting the Injury Severity Scale, give some example items and the scoring procedure,
and state its psychometric properties. Please describe the data discrepancies and how they were resolved. Please provide a stronger rationale for the data analysis plan, and explain how the regression analysis accounts for causal (as opposed to merely contiguous) relationships among variables.

Response: The 223 eligible cases were identified from both databases. We have prepared a paragraph dedicated to describe the mechanism to ensure data accuracy and integrity of the data abstracted and the potential shortcomings. Moreover, we have added the degree of agreement between the two data abstracters. Specifically, there were 90% of data collected identical between the two data abstracters and 10% of data discrepancy were discussed and resolved.

The Injury Severity Scoring (ISS) has been a globally accepted and validated severity scoring system for assessing injury severity in patients with trauma. Thus it was adopted to assess the severity of injuries. The rationale, what it measures, its scoring procedure, and citation of its validity have been added in the Methods section.

Structured multiphase logistic regression, instead of an ordinary multiple logistic regression, was used because it avoids inappropriate adjustment of confounding variables. Specifically, the independent variables are arranged in three sequential phases according to their causal relationships such as variables at a level may affect variables at later levels but not vice versa. A variable would be qualified as a confounder of the effect of another variable (say A) on an outcome only when it has a causal influence on both variable A and the outcome. For example, when assessing the impact of age (in level 1), we would not adjust for variables at later levels such as marital status (in level 2) because they should not causally affect age. By the same token, when assessing the impact of marital status (in level 2), we need to adjust variables in level 1 because they are qualified confounders but not variables in level 3. We have added the explanations in the text.

3. The data results are very detailed and may be informative to the medical profession.

Response: We thank for reviewer’s nice note.

4. The figure has interesting information but it is rather busy and making comparisons across categories is not easy. Consider collapsing across the four HNF areas. The most important results from Table 2 are already in the test of the results section and the table can be deleted. Consider dichotomizing some of the variables analyzed (Tables 3 and 4); e.g., ever married to perpetrator (yes, no), punched with fist (yes, no). Consider including both orbital regions in the upper third of the head.

Response: We took the reviewer’s suggestion and have collapsed the information into four HNF areas. Both orbital regions were grouped in the upper third of the head. The revised figure was attached. Both regression tables were also amended accordingly to clearly show the comparators.

5. The discussion says little about the main question raised in the introduction; please expand, and discuss the implications for clinical practice and cultural competence. The reference to natural selection
requires introduction earlier in the manuscript and detail as to how it explains staying in an abusive relationship - or cut this part of the discussion. Some limitations in the discussion should be raised in the method or results; i.e., missing values, other data problems. I would like to see the discussion open with a full summary of the results followed by clinical implications.

On p. 11, it is a bit misleading to say the data were collected from women's self-reports, as they were obtained from archival data, based on clinical assessments. If clinical assessments do not include a thorough examination of all (not just self-reported) injuries among women who identify themselves as IPV victims, this is an opportunity to recommend that such assessments be improved.

Response: We have revised the introduction section to make it clear that we do not aim to assess the difference between Caucasian and Chinese women. Instead, the study aims to examine the patterns of HNF injuries presenting to Accident and Emergency departments (AEDs), including the anatomical regions, types, severity, aetiology and risk factors of injuries caused by intimate partners in Chinese abused women.

Both reviewers had the concern on discussing natural selection theory. Therefore, we have removed the rationale based on natural selection theory from the Discussion section. The Discussion section has also been revised in accordance with the reviewer’s suggestion; first highlight the key results followed by a discussion on their clinical implications.

The archival data were medical reports comprising both women’s self-reported data and physical examination results. For example, pain/tenderness would be self-reported data while bruises would be obtained by physical examination. We have clarified this in the Discussion section. Because self-reported data like pain and tenderness concern about the perception of individual subjects and needed to be self-reported, we have not recommended the use of objective assessments.

6. The limitations are clearly stated. I would like to see discussion of research implications stemming from both the current findings and the limitations.

Response: Thanks for the reviewer’s suggestion. We have added a paragraph on research implications as follows:

“Although HNF injuries are commonly reported in abused women presenting to AEDs, limited studies investigated the long term effect on physical and mental health of women after HNF injuries. Some cross-sectional studies assessed for cognitive functioning (such as memory, attention, executive functions and learning) among abused women [26, 39, 40]. Therefore, future research in longitudinal design is necessary to test for the temporal relationship between cognitive functioning and HNF injuries in abused women experiencing abuse and violence.

Apart from obtaining archival data from AEDs, screening of HNF injuries in community women is recommended. It can provide a better understanding of physical injuries among abused Chinese women. We anticipated that having a community sample would yield more non-HNF injuries among abused women.”
7. The authors acknowledge previous work but they do not fully detail it or characterize the samples correctly (e.g., referring to the literature as relevant only to Caucasian victims). I would like to see a statement that the present study participants were not also in the authors’ previously published work (or an appropriate acknowledgement if any of the participants were).

Response: We have added more characteristics of the samples considered in the previous work. Also, the present study participants were not involved in our previously published work. We have clarified these by the end of the paper.

8. The abstract and title accurately convey what has been found. The abstract's concluding statement, however, does not follow from what has been reported. To state that knowledge of PIV injuries is important to early identification requires that IPV injuries are unique, in comparison to non-IPV injuries.

Response: We agree with the reviewer and have withdrawn the last sentence in conclusion.

9. The writing is acceptable and generally clear.

Other comments:
- On p.3, please provide more recent evidence in addition to the WHO (2002) reference.
  Response: We have added the latest WHO report on 2013 on responding to intimate partner violence and sexual violence against women as reference.
- On p. 3, please place the health care costs comment in the context of a particular country or economy
  Response: We have provided the evidence from the findings of a US study.
- On p. 3, please provide references to support the assertions that Chinese women are unwilling to disclose, use placating, and use normalizing.
  Response: We have added two references accordingly.
- On p. 4, please say that IPV victims presented with injuries, instead of the IPV-related injuries presenting.
  Response: We have revised accordingly.
- On p.5, please provide a rationale for studying admission dates, times, treatments, and discharge.
  Response: The information will be useful for clinicians to know the patterns of women sought help from health care professionals at AEDs. We added the information accordingly.
- On p.6 what is the purpose of reference 16?
  Response: This is used to support that HNF injuries have been known as a significant indicator of IPV.
- On p. 7 what is the possible range of ISS scores?
  Response: The range is 0-75. We have added the detailed information of ISS in method section.
- Consider a figure illustrating the human head and indicating which injuries were received in each location.
Response: As all the anatomical sites are standardized term. We would like to keep the bar chart to indicate the injuries in each location.

- On p.12 please refer to the literature on IPV screening and recent works concluding that universal screening is not helpful.

Response: Indeed, the latest U.S. Preventive Services Task Force recommended to do screening of IPV to asymptomatic women (women who do not have signs or symptoms of abuse) of reproductive age and elderly and vulnerable adults. We have added the information in the Discussion section.

Revisions I would consider major and necessary include a stronger rationale, more details of data problems in the method section, and a measure of inter-rater reliability between the data coders in this study. I believe, though, that attention to all the above comments will help the manuscript make a stronger contribution to the existing literature.
**Title:** Patterns, aetiology and risk factors of intimate partner violence-related injuries to head, neck and face in Chinese women: A retrospective study

**Reviewer 2:** Sheila Sprague

General Comments:

The current study is a well-designed retrospective study of medical charts. The paper needs more detail and description, especially in the introduction and methods sections. The statistical analysis plan is unclear and should be significantly revised. The overall study will be of modest impact in the IPV field.

*Response: We thank for the reviewer’s positive comments.*

Specific Comments:

Major Compulsory Revisions

Abstract

1. In the findings section of the abstract, it is unclear what the comparator is. For example, “punching with a fist was exerted significantly more on the upper third of the maxillofacial region”. What is this compared to?

   *Response: We have amended the abstract and made it clear that punching with a fist was associated with upper third of the maxillofacial region injury.*

Introduction

2. The first paragraph of the introduction nicely introduces the concept of IPV and the consequences of HNF injuries. The remainder of the introduction could be reorganized to include a discussion of why HNF injuries specifically are important in IPV. A bit more background on the work done in the HNF injury field would be helpful along with a description of current guidelines (or lack thereof). Dentistry has a large amount of literature on HNF injuries and IPV.

   *Response: We thank reviewer’s suggestion. We have expanded the introduction and indicated the importance in understanding HNF injuries in abused women. We have added the following paragraph:*

   “Understanding patterns of IPV-related HNF injuries is essential. For example, a study showed that the frontal lobe of the brain was found to be one of the most affected structural regions in abused women with head injuries [11]. Prefrontal cortex, which is located in the
frontal part of the head, has been known to be responsible for executive and cognitive functions, such as perception, judgment, reasoning, problem solving, and choice making [12]. Therefore, it helps to explain why cognitive impairment can be possibly found in abused women.”

3. The introduction does not make a case for why it is important to determine patterns of injury and etiology. Some information on this would really let the reader know why this particular study will make an impact.

Response: In order to let the reader know the significance of this study, we specifically added the following paragraph:

“Understanding patterns of IPV-related HNF injuries is essential. For example, a study showed that the frontal lobe of the brain was found to be one of the most affected anatomical sites in abused women with HNF injuries [14]. Prefrontal cortex, which is located in the frontal part of the head, has been known to be responsible for cognitive functions, such as perception, reasoning, judgment, problem solving, and decision making [15]. Therefore, it helps to explain why cognitive impairment can be possibly found in abused women.”

4. Paragraph 1 line 4-5 states that “Of IPV-related physical injuries, over 90% have been found to involve the head, neck or face...” The first reference listed (Monahan & O’Leary, 199) reports that 35% of physical IPV injuries involve the head. Another study by my research group (Bhandari M, Dosanjh S, Tornetta P 3rd, Matthews D. Musculoskeletal manifestations of physical abuse after intimate partner violence. J Trauma. 2006 Dec;61(6):1473-9) reports that 40% of physical IPV injuries are HNF related. This is not an exhaustive search so I suggest that the authors complete a more thorough search of the literature on the topic and this sentence should be revised to reflect current literature.

Response: We are sorry for the confusion. After searching for more articles, we have revised the prevalence as around 40%.

Methods

5. Overall, the study is a well-designed retrospective study but the manuscript lacks important details. In the eligibility criteria section, the authors should state how many charts they reviewed and how many were excluded and the reasons for exclusion to give
the reader an idea of how much bias could have been introduced into the screening and eligibility process. The use of two reviewers for eligibility, however, is excellent.

Response: We thank for reviewer’s positive comments. More detailed information of the chart reading process have been provided. Specifically, we have added the following paragraph:

“In total, 267 eligible medical records were identified from the two computerized systems. Individual medical charts were then retrieved from the Medical Records Offices of the two hospitals. The first and second authors (JW and AC) manually and independently reviewed 267 medical charts. Six medical charts were excluded from the data analysis as we found that the women did not have IPV-related injuries but injuries associated with indecent assaults by non-intimate partners. Also, there were 38 medical charts in which the patients were male. Therefore, they were excluded from the data analysis. Finally, 223 eligible cases were identified from both systems for patient records.”

6. Paragraph 3 of the data abstraction section states that the ISS was used for determining severity. It is unclear how the authors applied the ISS to determine the severity. Did the ISS include all of a patient’s injuries or just the HNF injury? This should be clarified within the manuscript.

Response: We have added more information related to ISS in the following paragraph:

“For the severity of injuries, we adopted a global severity scoring system Injury Severity Score (ISS) because it has been a global and validated severity scoring system was adopted [21, 22]. Each injury is assigned an Abbreviated Injury Scale (AIS) score [23] and is allocated to one of six body regions — Head, Face, Chest, Abdomen, Extremities (including Pelvis) and External in calculating the ISS. The AIS rates injuries on a scale of 0 (no injury) to 6 (unsurvivable injury), whereas, the ISS score takes values from 0 to 75. ISS was the sum of the squares of the highest AIS grade in each of the three most severely injured areas. The higher the score, the greater the severity.”

7. I have many questions about the data analysis, which overall requires more description. The data analysis paragraph states that a logistic regression was conducted for each region of injury. More information is needed on the nature of the analysis. For example, how many factors went into the model, which factors, and how did the authors decide which factors were used? Was a stepwise method used or another method? It is unclear
what the comparator was in the regression analysis. Did the analysis compare patients with HNF injuries and those without? The authors should state this explicitly.

Response: We have added more detailed description of the structured multiphase logistic analysis in the methods section. Specifically, we have indicated how the analysis took into account the possible causal relationships among the independent variables. We did not perform a stepwise variables selection because it has been known to increase false positive error rate, but rather we considered all variable and checked the tolerance to ensure absence of multi-collinearity. The outcomes considered are also clarified.

8. There is no mention of a sample size calculation or power analysis. The authors should state their rationale for including 223 charts.

Response: We have added the sample size calculation in the methods section.

9. Was the data analysis plan determined a priori or after the data was collected? I am concerned that there are a large number of analyses and no mention of any corrections for multiple testing. The authors did not provide a rationale for why so many analyses were carried out.

Response: The study objectives were planned a priori and the analysis was decided after the data were collected. However, the main findings are based on the two regression analyses in Tables 2 and 3 in the revised manuscript only.

Results

10. Table 2 could have been done with a chi-square analysis instead of a regression. What is the rationale for a regression? It is unclear what this table adds to the paper.

Response: We have taken the suggestion of reviewer 1 to remove Table 2 because most of the important information has been reported in text. We have also taken the suggestion of reviewer to use the chi-square test. In the text, we have reported as follows:

“Chi-squared tests were performed to understand their relationships to injuries of different parts of the head and maxillofacial region. The results showed that injuries to the upper third of the face and the back of the head were significantly associated with punching with a fist ($X^2 = 6.54, p = .01$; $X^2 = 4.94, p = .03$), while injuries to the middle third of the face were significantly associated with slapping ($X^2 = 4.2, p = .04$).”
11. Table 3 should include an indication of how many patients were included in the analysis (N).
   Response: We have added number of patients in Table 3 and Table 4.

12. It is also unclear what table 4 adds to the paper. Why not just add “multiple injuries” as a factor in the original regression. The authors may have issues with being underpowered for the analysis in table 4.
   Response: Multiple injuries refer to patients who had injury at HNF as well as in other regions. Hence, patients with such multiple injuries present as a more severely injured group and we would like to explored factors associated with this group of individuals. We have clarified the outcome in the methods section and added more on its significance in the Discussion section.

Discussion

13. The discussion states that “Based on the natural selection theory, cohabiting couples with lower levels of violence tend to move from cohabitation to marriage, whereas couples with higher levels of violence tend to stay in cohabiting relationships.” I don’t believe that this is true. Often, violence men are not violent while they are dating then become violence once married as she is now “under his control”. This certainly doesn’t apply to many Eastern cultures such as India, where dating and cohabiting are less popular. One could also argue that cohabiting relationships are easier to leave than marriages, therefore there should be less violence in cohabiting relationships. Regardless, this sentence needs to be rewritten or requires a reference.
   Response: We have revised the sentence and removed the part on natural selection theory.

14. Paragraph 4, line 1 states that “IPV-related injuries tended to occur repeatedly among abused women.” This sentence is unclear and imprecise. The sentence should be rewritten to note that this is for physically injured IPV victims who present to AEDs, not the general population of abused women.
   Response: The sentence has been revised as follows:
   “IPV-related injuries tended to occur repeatedly among abused women presenting to AED.”

15. The conclusion states that the findings are “essential to help clinicians to improve diagnosis” for IPV victims. It is unclear how knowing about these factors will help
diagnose victims. Many attempts have been made to create a predictive model of determining who is at risk for IPV, but none have been sensitive or specific enough. How does this study add to that body of literature? Some discussion of these past attempts would be beneficial.

Response: This study informed the clinicians of the importance of systematic assessment on women presenting to AEDs. There were missing data noted from the medical charts, which indicated inadequate assessment from the clinicians. Therefore, it is suggested to establish a standardized form to obtain reliable data so as to help in finding predictors of HNF injuries and inform diagnosis.

Minor Essential Revisions

16. Introduction Paragraph 2, line 1: incorrect use of the word “despite”. The wording should be revised to make the author’s point clearer.

Response: We have amended the sentence accordingly.

Discretionary Revisions

17. The first paragraph of the results section states that only three quarters of the participants were Chinese. Was being Chinese not an eligibility criterion? If not, then can this really be called a study of Chinese women? Perhaps the authors should rephrase the title.

Response: There is only around 15% of women are non-Chinese and 10% of women with unknown ethnicity. Although they are non-Chinese in ethnicity, some of them stayed in Hong Kong as residents for many years.

18. In the Pattern of HNF Injuries section, it may be helpful for the authors to report actual numbers as well as percentages in this paragraph.

Response: We have added the actual numbers as well as the percentages.

19. Figure 1 is very difficult to read in greyscale. Will this be published in colour? If not, the authors should consider making the figure into a table for the reader’s convenience.

Response: We took the advice from reviewer 1 and amended the figure as attached. The injured regions were grouped into 5 areas for reader’s convenience to read.
20. Discussion Paragraph 4, line 4-5: The sentence can be reworded to include the next part as follows, “It is likely that the women will return to their abusive partners due to a variety of reasons such as, financial dependence, emotional dependence, and protection of their children.”

Response: Thanks reviewer for the suggestion. We have revised accordingly.