

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Trends of injury mortality during the COVID-19 period in Guangdong, China: A population-based retrospective analysis
<b>AUTHORS</b>	Zheng, Xue-yan; Tang, Si-li; Ma, Shu-li; Guan, Wei-jie; Xu, Xiaojun; Xu, Haofeng; Xu, Ying-shan; Xu, Yan-jun; Lin, Li-feng

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Douglas Zatzick University of Washington School of Medicine, United States
<b>REVIEW RETURNED</b>	16-Oct-2020

<b>GENERAL COMMENTS</b>	<p>This is an important topic and study that uses a population based retrospective analysis to compare injury mortality changes during the COVID-19 pandemic and a specified control period a year prior in Guangdong, China. Overall, the design and methods are sound and the description of the results as observational, showing reductions in injury most generally and specific injury categories are important and relevant to the understanding the impact of the world-wide COVID-19 pandemic.</p> <p>The paper however could be improved in several regards. To begin, some of the observations and associated conclusions drawn are quizzical. For example, the observation that mortality changes from self-harm increased significantly in the 0-14 age group is not fully elaborated on in the discussion. Observations from the United States during the COVID-19 pandemic potentially substantiate the plausibility of many of the study findings such as reductions in transport injuries and other injury types. Similarly, lockdowns and stay at home orders, could increase interpersonal violence in households at risk for intentional injury between family members. An increase risk in a 0-14 age group for self-harm, however, could be elaborated on with further references supporting why this might occur in the Chinese COVID-19 context.</p> <p>Also, the overall English language quality of the writing is substandard for publication. At times, further polishing of the writing would be appropriate and would not change the descriptive context and meaning of the manuscript, however there are some more notable issues. For example, the clarity of abstract lines 12-14, “we conducted a population based retrospective analysis to compare mortality changes of different injury categories including injury”, is obfuscated and would need to be more precisely honed to clarify meaning. Similarly, the abstract’s final sentence on line 43, “...interventions for public” and lines 8-14 on page 9, “Even though, self-harm, transport injury, falls, interpersonal violence mortality changes in 70-79, age group did not yielded a statistical significance, while the increases of this age group in different sex</p>
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	population were noteworthy”, would need to be markedly reworded. These examples demonstrate the importance of a thorough and detailed editing of the manuscript with an eye to English language translation and context.
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<b>REVIEWER</b>	Agnieszka Pac Jagiellonian University Medical College
<b>REVIEW RETURNED</b>	18-Oct-2020

<b>GENERAL COMMENTS</b>	<p>Manuscript „Injury mortality changes at the COVID-19 period in Guangdong, China” deals with very interesting topic. However is should be corrected before publication. Please find detailed comments to this paper.</p> <ol style="list-style-type: none"> <li>1. The half year observation period is too short to claim that “mortality benefits from COVID-19, maybe during this period the mortality decreased in some groups but it can have long-time consequences.</li> <li>2. Please indicate in abstract the most important results with the proper numbers. Indicate directly the time period under the consideration.</li> <li>3. Study design and data source – Please give the references to the Cause of Death Reporting System that was data source.</li> <li>4. In statistical analysis the method for data completeness was assessed, but I have not found any results nor discussion of this topic.</li> <li>5. In addition – the negative binomial model was declared to be used in this study and in results (table 2) I have found results of Poisson regression model). Please prepare strict description of statistical method used to compare Covid-19 and control periods.</li> <li>6. Add the information how were the percentage changes calculated.</li> <li>7. The results were presented as mortality per 100 000 – indicate what population was used for these calculations in 2019 and 2020 (denominators).</li> <li>8. What does “duration” mean in the sentence “... to explore associations of deaths with socio-demographic factors including sex, age group, and duration”?</li> <li>9. Lines 193-194: sentence “Mortality from drowning declined from 0,44% to 55,27% in all age-sex groups” should be corrected – you have cited the range for declining in different groups.</li> <li>10. In the discussion it should be more clearly indicated what are the changes in mortality related to COVID-19 situation, less important are road construction and other measures which probably not “happen” between two study periods.</li> <li>11. It should be discussed why in the specific sex-age groups the observed changes are different from others and population trends.</li> <li>12. Please indicate why the analysis was performed for 21 cities only, not regions / counties.</li> <li>13. Present the data in the same way – as changes between the Covid-19 and control periods – not sometimes as mortality and in next figure as mortality changes. Which age groups were the primary analysis – see fig. 3 and fig. 4</li> <li>14. In discussion, potential sources of bias should be discussed in depth – completeness of mortality and other data, data quality.</li> <li>15. English should be corrected by native speaker.</li> </ol>
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<b>REVIEWER</b>	Lawrence Palinkas
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	University of Southern California USA
<b>REVIEW RETURNED</b>	20-Oct-2020

<b>GENERAL COMMENTS</b>	<p>The manuscript describes a study that documents significant declines in mortality due to injury in Guangdong province in China. Data from death records that appear to be collected systematically were used to compare mortality over the first six months of the COVID-pandemic compared to a comparable period the previous year.</p> <p>The rationale for conducting the study needs further explanation. The fact that the topic has yet to be investigated by anyone is not a sufficient reason for conducting a study. The authors should explain why they believed the pandemic would have an impact on injury mortality. For instance, were they concerned that the pandemic would result in injuries linked to psychological distress?</p> <p>Second, the manuscript provides information of mortality rates per 100,000 population, but provides no information on the number of deaths due to all-cause injuries and specific kinds of injuries. Such information should be provided in the text or tables.</p> <p>Third, the authors state that the aim of the study was to explore the association of deaths with socio-demographic factors, including sex, age group, and duration. Data on age and sex differences are provided in the tables and figures, but there are no results that refer to duration. It is not clear what the authors mean by duration in this study. Furthermore, results are presented to highlight differences in 21 cities, but this is not identified as a study aim in the introduction, nor is an explanation provided as to why such differences were examined in the first place.</p> <p>Fourth, the discussion helps to explain some but not all of the findings. It makes clear why death rates due to self-harm in 0-14 year olds and in 70-79 year olds might increase as a result of the pandemic and how observed decreases reflect broader, non-pandemic related trends. However, it does not explain, for instance, why self-harm rates increased dramatically in some cities and not in others. Why was there a decline in interpersonal violence. Presumably the stress of unemployment and the fear of getting infected would have led to an increase in IPV, as it has in other studies. It isn't clear why there was a decline in deaths due to burns or smoke-related injuries.</p> <p>Finally, despite the importance of the topic, the manuscript could benefit greatly from a review and editing by a native English speaker. Use of terms like "injury" and "lower category" of injury seem awkward and misleading. A distinction should be made between "all-cause" injury and "specific" or "individual" injury categories. The past tense should be used consistently to describe what was done and what was found. The sentence on p. 4, lines 109-110 seems incomplete. What is urgent? Can "fire, heat, and hot substances" be simplified to say "heat-related injuries"? Authors should check to see if the journal prefers to describe men and women in terms of sex or gender.</p>
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## VERSION 1 – AUTHOR RESPONSE

Reviewer Comments to Author:

Reviewer 1:

COMMENT 1: This is an important topic and study that uses a population based retrospective analysis to compare injury mortality changes during the COVID-19 pandemic and a specified control period a year prior in Guangdong, China. Overall, the design and methods are sound and the description of the results as observational, showing reductions in injury most generally and specific injury categories are important and relevant to the understanding the impact of the world-wide COVID-19 pandemic.

RESPONSE 1: Many thanks for the positive comments from the reviewer.

COMMENT 2: The paper however could be improved in several regards. To begin, some of the observations and associated conclusions drawn are quizzical. For example, the observation that mortality changes from self-harm increased significantly in the 0-14 age group is not fully elaborated on in the discussion. Observations from the United States during the COVID-19 pandemic potentially substantiate the plausibility of many of the study findings such as reductions in transport injuries and other injury types. Similarly, lockdowns and stay at home orders, could increase interpersonal violence in households at risk for intentional injury between family members. An increase risk in a 0-14 age group for self-harm, however, could be elaborated on with further references supporting why this might occur in the Chinese COVID-19 context.

RESPONSE 2:

1. The reference that pertains to the increased risk in the 0-14-year group for self-harm is still lacking. This is the first study which has demonstrated the self-harm mortality at different age and sex strata at the provincial level in China, making comparisons between COVID-19 pandemic period and control period in 2019. We have further discussed the reasons for the increased risk in the 0-14-year group: “Our results revealed an increased death rate for self-harm in the 0-14-year and 70-79-year group in both sexes. The likely adverse effects of the pandemic on children’s mental health might be exacerbated by fear of being infected by SARS-CoV-2, self-isolation and physical distancing because of school closure [28]. These contributed to an increase in the prevalence of post-traumatic stress disorder symptoms, depression, anxiety and stress [29]. In conjunction with a higher risk of being exposed to the family conflicts, the household physical violence, academic stress and economic damage which were caused by the COVID-19 crisis might have collectively led to an increased rate of suicide among children [30]. A loss of employment, financial stressors and alcohol consumption, which have also been the well-recognized risk factors causing family conflict [31], might have aggravated during the lockdown. Despite of the mental health problems, the family conflict, the elderly might be increasingly concerned because of the extraordinarily high case-fatality rate [32]. This might have also contributed to the increased risk of self-harm in the elderly.” (Discussion/Para 6 /Line 5-18)

2. We have revised the reasons for the decreased mortality of road and traffic injury by using the observation data from other countries, along with the reasons of lockdown and quarantine measures during COVID-19 pandemic period. The revised discussion is as follows:

“Because our study was conducted during the COVID-19 pandemic when stringent lockdown and quarantine measures were enforced in mainland China, the most prominent impact of COVID-19 on injury would not be fully captured. During the COVID-19 outbreak, most people avoided outdoor activities to minimize the use of healthcare services and the likelihood of SARS-CoV-2 infection (Severe Acute Respiratory Syndrome Coronavirus-2). Consequently, there has been a notable decrease in the mortality from transport injury and drowning at all age strata. Similar results have been documented in the UK [14] and India [15]. Degenerative spine and traumatic brain injuries also decreased significantly during the pandemic in UK [14]. The lockdown has grossly decreased the disability-adjusted life year caused by road traffic injury [15]. ” (Discussion/Para2)

3. “The causes of death from interpersonal violence have been multifactorial. Theoretically, unemployment and fear of acquiring COVID-19 infection would have predisposed to an increased

incidence of household interpersonal violence that is usually not fatal. However, both the incidence and mortality of social interpersonal violence would sharply decrease because of the stringent lockdown and quarantine measures which could be fatal. The decrease in the mortality associated with social interpersonal violence might have largely been offset by the non-fatal incidence of household interpersonal violence.” (Discussion/Para 4). In this study, we focused on mortality of all-cause and specific injury categories, “There was a lack of reliable injury incidence data.”(Discussion/Para 7/Line 1)

COMMENT 3: Also, the overall English language quality of the writing is substandard for publication. At times, further polishing of the writing would be appropriate and would not change the descriptive context and meaning of the manuscript, however there are some more notable issues. For example, the clarity of abstract lines 12-14, “we conducted a population based retrospective analysis to compare mortality changes of different injury categories including injury”, is obfuscated and would need to be more precisely honed to clarify meaning. Similarly, the abstract’s final sentence on line 43, “...interventions for public” and lines 8-14 on page 9, “Even though, self-harm, transport injury, falls, interpersonal violence mortality changes in 70-79, age group did not yielded a statistical significance, while the increases of this age group in different sex population were noteworthy”, would need to be markedly reworded. These examples demonstrate the importance of a thorough and detailed editing of the manuscript with an eye to English language translation and context.

1. We have revised the sentence “We conducted a population-based retrospective analysis to compare mortality changes of different injury categories including injury, transport injuries, poisonings, falls/fire/heat/hot substances, drowning, self-harm and interpersonal violence based on sex, age groups between study and control period in Guangdong, China” as

“We conducted a population-based retrospective analysis to compare mortality changes of all-cause injury and transport injuries, poisoning, falls, fire/heat/hot substances, drowning, self-harm and interpersonal violence, and stratified by sex and age.”

2. We have revised the sentence “However, increased mortality of falls, fire/heat/hot substances injury and self-harm in specific age population during the COVID-19 period, warrant selective, indicated and universal interventions for public” as

“However, the increase in mortality associated with falls, fire/heat/hot substance injury and self-harm in specific age population warrant targeted control and prevention measures for the population at risk.”

3. We have revised the sentence “Even though, self-harm, transport injury, falls, interpersonal violence mortality changes in 70-79, age group did not yielded a statistical significance, while the increases of this age group in different sex population were noteworthy” as

“Although mortality changes in some groups did not reach statistical significance, some increases were also noteworthy during the COVID-19 period (i.e. self-harm, transport injury and falls) in the 70-79-year group.”

Reviewer 2:

Manuscript “Injury mortality changes at the COVID-19 period in Guangdong, China” deals with very interesting topic. However is should be corrected before publication. Please find detailed comments to this paper.

COMMENT 1: The half year observation period is too short to claim that “mortality benefits from COVID-19, maybe during this period the mortality decreased in some groups but it can have long-time consequences.

RESPONSE 1: Thanks for the reviewer’s comment. We would retain our analysis on the half year observation in light of the following reasons:

1) As a consequence of the COVID-19 pandemic, strict quarantine measures have been introduced to curb the COVID-19 transmission in China (including people who have not contracted COVID-19 patients). Stringent lockdown and quarantine measures have been enforced by the Guangdong

government in an unprecedented effort to control the COVID-19 epidemic, from January 24th, 2020 to February 10th, 2020.

2) Unlike the chronic diseases, injury death could only be expressed as a binary outcome (yes or no), characterized by a short duration and rapid progression. By late June 2020, it has been a prolonged period to identify the injury changes when compared with the control period in 2019.

3) The number of COVID-19 cases has been decreasing greatly after the stringent lockdown and quarantine measures. Workforce started returning to work in China under a certain order. The Guangdong government has released a policy to support full workforce return on 13th April. The injury death number might have recovered to the normal level if we analyzed the period by the end of 2020.

COMMENT 2: Please indicate in abstract the most important results with the proper numbers. Indicate directly the time period under the consideration.

RESPONSE 2: We have added the important results with the numbers and the time period in the abstract.

1) We conducted a population-based retrospective analysis to compare mortality changes of all-cause injury and transport injuries, poisoning, falls, fire/heat/hot substances, drowning, self-harm and interpersonal violence, and stratified by sex and age. Comparisons were made between the COVID-19 period (between Jan 2020 and Jun 2020) and control period (between Jan 2019 and Jun 2019) in Guangdong, China.

2) Mortality changes of self-harm increased by 127.36% in the 0-14-year group during the COVID-19 period as compared with the control period.

3) Although mortality changes in some groups did not reach statistical significance, some increases were also noteworthy during the COVID-19 period (i.e. self-harm, transport injury and falls) in the 70-79-year group. The respective increase in mortality changes was 16.86%, 3.32% and 4.92%..

COMMENT 3: Study design and data source—Please give the references to the Cause of Death Reporting System that was data source.

RESPONSE 3: We have added the following reference.

8. Zhou M, Wang H, Zhu J, Chen W, Wang L, Liu S, et al. Cause-specific mortality for 240 causes in China during 1990-2013: a systematic subnational analysis for the Global Burden of Disease Study 2013. *Lancet*. 2016 Jan 16;387(10015):251-72.

COMMENT 4: In statistical analysis the method for data completeness was assessed, but I have not found any results nor discussion of this topic.

RESPONSE 4: We have added the relevant contents in the results and discussion section.

1) The completeness was 97.03% and 98.53% based on the empirical estimation, respectively. (Results/Para 1/Line 1-2)

2) " Some limitations should be addressed. There was a lack of reliable injury incidence data. Therefore, the comparability of mortality data and incidence data due to the death registration completeness and coverage should be interpreted with caution. Although we have used an empirical method to minimize the underestimation in the death surveillance, the magnitude of completeness of the mortality data varied considerably for children and adult deaths based on the GBD 2010 study's finding [35]. The completeness of data in children was usually lower than that in adults in Latin America and Asia." (Discussion/Para 7/Line 1-8)

COMMENT 5: In addition -the negative binomial model was declared to be used in this study and in results (table 2) I have found results of Poisson regression model). Please prepare strict description of statistical method used to compare Covid-19 and control periods.

RESPONSE 5: We apologize for the mistake. We have clarified the model as negative binomial model.

COMMENT 6: Add the information how were the percentage changes calculated.

RESPONSE 6: We have added "The percentage changes were calculated with the following formula:  
" In the method (Method/Statistical analyzes/Line3-4)

"Mortality in COVID-19 period - Mortality in control period in 2019" / "Mortality in control period in 2019"  
"×100%"

COMMENT 7: The results were presented as mortality per 100 000-indicate what population was used for these calculations in 2019 and 2020 (denominators).

RESPONSE 7: The denominator information "The registered population number in different age and sex strata in both 2019 and 2020 that corresponded to different cities in Guangdong province were obtained from the Population Basic Information System, by using as the denominators for mortality calculation." has been added the methods section (Method/ Statistical analyses/Para 1/Line 1-5)

COMMENT 8: What does "duration" mean in the sentence "... to explore associations of deaths with socio-demographic factors including sex, age group, and duration"?

RESPONSE 8: We have revised the description as "Because of the overdispersion of injury deaths, we used negative binomial models to explore the associations of deaths within the COVID-19 period in different sex and age strata" (Method/ Statistical analyses/Para 3/Line 1-3)

COMMENT 9: Lines 193-194: sentence "Mortality from drowning declined from 0.44% to 55,27% in all age-sex groups" should be corrected -you have cited the range for declining in different groups.

RESPONSE 9: We have deleted the sentence "Mortality from drowning declined from 0.44% to 55.27% in all age-sex groups".

COMMENT 10: In the discussion, it should be more clearly indicated what are the changes in mortality related to COVID-19 situation, less important are road construction and other measures which probably not "happen" between two study periods.

RESPONSE 10: We have deleted the contents of road construction and measures and revised the discussion as follow: "Because our study was conducted during the COVID-19 pandemic when stringent lockdown and quarantine measures were enforced in mainland China, the most prominent impact of COVID-19 on injury would not be fully captured. During the COVID-19 outbreak, most people avoided outdoor activities to minimize the use of healthcare services and the likelihood of SARS-CoV-2 infection (Severe Acute Respiratory Syndrome Coronavirus-2). Consequently, there has been a notable decrease in the mortality from transport injury and drowning at all age strata. Similar results have been documented in the UK [14] and India [15]. Degenerative spine and traumatic brain injuries also decreased significantly during the pandemic in UK [14]. The lockdown has grossly decreased the disability-adjusted life year caused by road traffic injury [15]." (Discussion/Para 2)

COMMENT 11: It should be discussed why in the specific sex-age groups the observed changes are different from others and population trends.

RESPONSE 11: Thanks for the reviewer's comment. Further discussions regarding mortality changes in specific sex-age groups were mentioned:

1. Fire, heat, and hot substances: "By contrast to the findings from the previous study, fire or smoke inhalation caused by fire are the main causes of the increased mortality among the elderly during the COVID-19 period in our study. People who died from fire, heat and hot substances were reported from the rural areas, where the elderly living alone were more likely to use biomass fuel (i.e., wood, coal, animal dung, crop residues) for cooking and heating." (Discussion/Para 3/Line 5-10)

2. Falls: "A greater proportion of the elderly living with chronic diseases were at risk of falls [19]. This problem tended to aggravate during the COVID-19 period because the elderly remain exposed to trauma due to domestic falls with a reduced number of health services [20]. In this case, the elderly

suffered from a higher risk of disability or death due to the delayed care and treatment for fall-related injuries [21-22].” (Discussion/Para 5/Line 6-7)

3. Self-harm: “Our results revealed an increased death rate for self-harm in the 0-14-year and 70-79-year group in both sexes. The likely adverse effects of the pandemic on children’s mental health might be exacerbated by fear of being infected by SARS-CoV-2, self-isolation and physical distancing because of school closure [28]. These contributed to an increase in the prevalence of post-traumatic stress disorder symptoms, depression, anxiety and stress [29]. In conjunction with a higher risk of being exposed to the family conflicts, the household physical violence, academic stress and economic damage which were caused by the COVID-19 crisis might have collectively led to an increased rate of suicide among children [30]. A loss of employment, financial stressors and alcohol consumption, which have also been the well-recognized risk factors causing family conflict [31], might have aggravated during the lockdown. Despite of the mental health problems, the family conflict, the elderly might be increasingly concerned because of the extraordinarily high case-fatality rate [32]. This might have also contributed to the increased risk of self-harm in the elderly.” (Discussion/Para 5/Line 5-17)

COMMENT 12: Please indicate why the analysis was performed for 21 cities only, not regions/counties.

RESPONSE 12: “There are 21 cities with 122 counties in Guangdong province” (Introduction/ Para 3/Line 2-3). There has been a large number of counties in Guangdong province. “We performed analysis based on the 21 cities because the population size remained stable and cities constituted an important administrative unit in Guangdong province” (Method/Study design and data source/Para 1/Line 12-14).

COMMENT 13: Present the data in the same way- as changes between the Covid-19 and control periods-not sometimes as mortality and in next figure as mortality changes. Which age groups were the primary analysis-see fig. 3 and fig. 4

RESPONSE 13: Thanks for the reviewer’s comment. We have deleted the original figure 3, and revised the percentage changes of the Y axis in Figure 4 to mortality (1/100000), which is now the updated Figure 3.

COMMENT 14: In discussion, potential sources of bias should be discussed in depth-completeness of mortality and other data, data quality.

RESPONSE 14: Thanks for reviewer’s advice. We have discussed the limitation of the mortality. “Some limitations should be addressed. There was a lack of reliable injury incidence data. Therefore, the comparability of mortality data and incidence data due to the death registration completeness and coverage should be interpreted with caution. Although we have used an empirical method to minimize the underestimation in the death surveillance, the magnitude of completeness of the mortality data varied considerably for children and adult deaths based on the GBD 2010 study’s finding [35]. The completeness of data in children was usually lower than that in adults in Latin America and Asia. Second, caution should also be exercised regarding the causative effect of the COVID-19 epidemic on injury mortality because of the limitation of the observational study design. Despite these limitations, our findings remained robust. The death registration is an all-cause of death surveillance which covered all the population residing in Guangdong. Data from the registration system in the recent years have been aligning well with the vital registration data that achieved a large increase in the coverage over the past decade [36].” (Discussion/Para 7)

COMMENT 15: English should be corrected by native speaker.

RESPONSE 15: We have carefully revised the language again for improving the quality throughout the manuscript.

COMMENT 16: What does “duration” mean in the sentence “... to explore associations of deaths with socio-demographic factors including sex, age group, and duration”?



RESPONSE 16: We have revised the description as "Because of the overdispersion of injury deaths, we used negative binomial models to explore the associations of deaths within the COVID-19 period in different sex and age strata [12-13]". (Methods/ Statistical analyses/Para 3/Line 1-3)

# Reviewer: 3

COMMENT 1: The rationale for conducting the study needs further explanation. The fact that the topic has yet to be investigated by anyone is not a sufficient reason for conducting a study. The authors should explain why they believed the pandemic would have an impact on injury mortality. For instance, were they concerned that the pandemic would result in injuries linked to psychological distress?

RESPONSE 1: Thanks for the reviewer's comment. We have revised the rationale for conducting the study to "We hypothesized that there would be both physical and mental health issues caused by the lockdown and quarantine measures during COVID-19 period. We sought to ascertain the injury mortality changes in Guangdong, China. This might help provide the evidence about the status quo of injury and mental health issues, as well as the guidance and actionable information for governments and public health authorities during the COVID-19 pandemic period." (Introduction/Para 4)

Other supported evidences have been provided in paragraph 2 of the introduction section "Recent studies have showed that the COVID-19 pandemic confers a profound effect on all aspects of society which is also extended to the mental health. Significant decreases in acute coronary syndrome-related hospitalization and out-of-patient rates have been reported in Italy early during the COVID-19 outbreak [3-4]. The projected increases in suicide have also been linked to the COVID-19 outbreak in Canada [5]. The vicarious traumatization scores of the general public have recently been shown to be significantly higher than those of the front-line nurses [6]. Different levels of psychological impacts including stress, anxiety and depression might be the reasons for the increase in suicide events. Multidisciplinary research priorities for the COVID-19 pandemic have called for an urgent action for mental health science [7]."

COMMENT 2: Second, the manuscript provides information of mortality rates per 100,000 population, but provides no information on the number of deaths due to all-cause injuries and specific kinds of injuries. Such information should be provided in the text or tables.

RESPONSE 2: We have provided the number of deaths due to all-cause injuries and specific types of injuries in supplementary material (E-Table 2, E-Table 4-5).

E-Table 3. Numbers for injury causes in Guangdong, China between the Onset of the COVID-19 outbreak and control Period in 2019

E-Table 4. Numbers for injury causes in Guangdong, China between the Covid-19 Outbreak and Control Period in 2019 in different age groups in male and female population.

E-Table 5. Numbers for injury causes in 21 cities of Guangdong, China between the Covid-19 Outbreak and Control Period in 2019.

COMMENT 3: Third, the authors state that the aim of the study was to explore the association of deaths with socio-demographic factors, including sex, age group, and duration. Data on age and sex differences are provided in the tables and figures, but there are no results that refer to duration. It is not clear what the authors mean by duration in this study. Furthermore, results are presented to highlight differences in 21 cities, but this is not identified as a study aim in the introduction, nor is an explanation provided as to why such differences were examined in the first place.

RESPONSE 3: Thanks for the reviewer's comments.

1. We have revised the description as "Because of the overdispersion of injury deaths, we used negative binomial models to explore the associations of deaths with COVID-19 period in different socio-demographic factors of sex and age" (Methods/ Statistical analyses/Para 3/Line 1-3)

2. We conducted mortality differences in 21 cities in Guangdong province regarding that “There are 21 cities with 122 counties in Guangdong province”. This was stated as an overview of the mortality changes of 21 units in Guangdong province.

COMMENT 4: Fourth, the discussion helps to explain some but not all of the findings. It makes clear why death rates due to self-harm in 0-14 year olds and in 70-79 year olds might increase as a result of the pandemic and how observed decreases reflect broader, non-pandemic related trends. However, it does not explain, for instance, why self-harm rates increased dramatically in some cities and not in others. Why was there a decline in interpersonal violence. Presumably the stress of unemployment and the fear of getting infected would have led to an increase in IPV, as it has in other studies. It isn't clear why there was a decline in deaths due to burns or smoke-related injuries

RESPONSE 4: Thanks for the reviewer's comments.

1. The increase in the mortality of self-harm (in Zhuhai, Zhaoqing, Meizhou, Yangjiang) and interpersonal violence (in Yunfu, Maoming and Zhaoqing) was statistically insignificant, so we did not further analyze in the discussion. Some of the increased mortality was dramatically high owing to the low number in different years (i.e. the number could be 0 in 2019 and 1 in 2020).

2. “The causes of death from interpersonal violence have been multifactorial. Theoretically, unemployment and fear of acquiring COVID-19 infection would have predisposed to an increased incidence of household interpersonal violence that is usually not fatal. However, both the incidence and mortality of social interpersonal violence would sharply decrease because of the stringent lockdown and quarantine measures which could be fatal. The decrease in the mortality associated with social interpersonal violence might have largely been offset by the non-fatal incidence of household interpersonal violence.” (Discussion/Para 4) In this study, we focus on mortality of all-cause and specific injury categories, “Some limitations should be addressed. There was a lack of reliable injury incidence data. Therefore, the comparability of mortality data and incidence data due to the death registration completeness and coverage should be interpreted with caution.” (Discussion/Para 7/Line 1-4)

3. Discussion for fire, heat, and hot substances:

“It remains unclear why the mortality of fire, heat, and hot substances in the general population decreased during the COVID-19 period based on the existing data and literature reports. In line with our study, some researchers have demonstrated a higher mortality in the elderly [16-17]. In the UK, scalds were accounted for 60% of deaths of fire, heat, and hot substances in the >75-year group [18]. By contrast to the findings from the previous study, fire or smoke inhalation caused by fire are the main causes of the increased mortality among the elderly during the COVID-19 period in our study. People who died from fire, heat and hot substances were reported from the rural areas, where the elderly living alone were more likely to use biomass fuel (i.e., wood, coal, animal dung, crop residues) for cooking and heating.” (Discussion/Para 3/Line 1-10)

COMMENT 5: Finally, despite the importance of the topic, the manuscript could benefit greatly from a review and editing by a native English speaker. Use of terms like “injury” and “lower category” of injury seem awkward and misleading. A distinction should be made between “all-cause” injury and “specific” or “individual” injury categories. The past tense should be used consistently to describe what was done and what was found. The sentence on p. 4, lines 109-110 seems incomplete. What is urgent? Can “fire, heat, and hot substances” be simplified to say “heat-related injuries”? Authors should check to see if the journal prefers to describe men and women in terms of sex or gender.

RESPONSE 5: We have revised the manuscript to improve the clarity.

1. We have revised the terms of injury to all-cause injury and specific injury.

2. The past tense have now been used consistently to describe what was done and what was found.

3. We have revised the statement in the introduction section as “Multidisciplinary research priorities for the COVID-19 pandemic have called for an urgent action for mental health science”

(Introduction/Para 2/Line 9-11)

4. We used the term 'fire, heat, and hot substances' which has been reported by the GBD study 2017 (GBD 2017 DALYs and HALE Collaborators. Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018 Nov 10;392(10159):1859-1922.).

5. We have verified that sex is acceptable term in the journal. Dr. Douglas Zatzick

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Dr. Douglas Zatzick University of Washington Medical Center
<b>REVIEW RETURNED</b>	15-Dec-2020
<b>GENERAL COMMENTS</b>	The authors have adequately addressed the Reviewer Critique. The quality of the English language writing has been improved.
<b>REVIEWER</b>	Agnieszka Pac Jagiellonian University Medical College
<b>REVIEW RETURNED</b>	28-Dec-2020
<b>GENERAL COMMENTS</b>	The authors addressed my concerns and I accept the changes that have been made.  The only concern is about the proper data description - "Increase in mortality changes" or "mortality changes .... increased" are not a proper one - increase in mortality rates was observed, but not increase in "mortality changes". - "multiple injury" - do you mean "all-cause injury"?
<b>REVIEWER</b>	Lawrence A. Palinkas University of Southern California United States of America
<b>REVIEW RETURNED</b>	17-Dec-2020
<b>GENERAL COMMENTS</b>	The authors are to be commended for their efforts to revise and resubmit this manuscript. For the most part, the revisions have adequately addressed the concerns raised by the reviewers. However, I still do not see a rationale as to why the authors examined geographic variation in mortality rates. The revision could still benefit from some editing for grammar.

#### VERSION 2 – AUTHOR RESPONSE

Reviewer Comments to Author:

# Reviewer 1:

COMMENT 1: The authors have adequately addressed the Reviewer Critique. The quality of the English language writing has been improved.

RESPONSE 1: Many thanks for the positive comments from the reviewer.

# Reviewer 2:

The authors addressed my concerns and I accept the changes that have been made.

COMMENT 1: The only concern is about the proper data description

- "Increase in mortality changes" or "mortality changes .... increased" are not a proper one - increase in mortality rates was observed, but not increase in "mortality changes".

- "multiple injury" - do you mean "all-cause injury"?

RESPONSE 1: Thanks for the reviewer's comment.

1) We have revised the description "Increase in mortality changes" as "increase in mortality rates".

A. Mortality of self-harm increased by 139.26% in the 10-14-year group during the COVID-19 period as compared with the control period. (Abstract/Results/Line 4-5)

B. The respective increase in mortality rate was 16.86%, 3.32% and 4.92%, respectively. (Abstract/Results/Line 8-9)

2) It was meant the all-cause injury and the injury of other categories. We have deleted the first bullet point from the Strengths and Limitations section based on the editor's requirement.

# Reviewer: 3

COMMENT 1: The authors are to be commended for their efforts to revise and resubmit this manuscript. For the most part, the revisions have adequately addressed the concerns raised by the reviewers. However, I still do not see a rationale as to why the authors examined geographic variation in mortality rates. The revision could still benefit from some editing for grammar.

RESPONSE 1: We have deleted geographic variation section in the manuscript. We have carefully checked the manuscript for the errors in grammar.