PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Differences in infant and child mortality before and after the Great East Japan Earthquake and Tsunami: A large population-based ecological study
AUTHORS	Tashiro, Ai; Sakisaka, Kayako; Okamoto, Etsuji; Yoshida, Honami

VERSION 1 – REVIEW

REVIEWER	Hiroyuki Hikichi Harvard T.H.CHAN School of Public Health, USA
REVIEW RETURNED	15-Apr-2018

GENERAL COMMENTS	The authors examined the association between geographic distribution of medical care resources and infant and child mortalities in affected areas of the Great East Japan Earthquake and Tsunami. They have to revise the manuscript to be accepted in this journal. 1. You demonstrated that the DBH located in a coastal area associated with the higher mortality rate, but it was not a surprising result since the coastal area was directly attacked by the tsunami. You must avoid estimating biased results. And, many people were killed by the tsunami on March 11. Any medical services were not able to rescue their lives during the tsunami was striking. They could deliver their medical services after the disaster. That is, I recommend you also need to focus on days except for March 11in 2011. From these reasons, separate your outcome to 1) March 11, 2011 and 2) other days in 2011. 2. The analysis should control disaster damages in each SMA (e.g., attacked by the tsunami). 3. Expand each abbreviation at the first mention. It was hard to follow your explanation. 4. P5, L17. Was "increased by 0.4-fold" a mistake? Should it be "1.4-fold"? 5. P10, L31. What is the "other data"? 6. P20, L12. What is the difference between coastal zones and ocean zones?

REVIEWER	Jennifer Horney

	Texas A&M University, USA
REVIEW RETURNED	15-May-2018

GENERAL COMMENTS	This paper needs an English language editor to address clarity, sentence structure, and grammar. I have provided editor-like comments for the abstract and the introduction. I feel that the authors must seek an additional author or editor who can provide this level of feedback for the remainder of the paper. Abstract: Objectives: To examine associations between access to medical care, geological data, and infant and child mortality in the area of northeastern Japan that was impacted by the Great Japan Earthquake and Tsunami (GEJET) in 2011. Design: Population-based ecological study using publicly available data. Setting: Twenty Secondary Medical AReas (SMA) in the disaster... Participants: Children under 10 years of age who died in the 20 SMAs between 2008 and 2014 (N=1,748). Primary...: Delete "was employed" Results: In general, rewrite to start sentences with the time range - for example, Between 2008 and 2014, the most common cause of death among children under 10 was accidents. I do not understand what the authors mean by ob-gym and public health nurses data. Ob-gyn has not been introduced as an abbreviation and is not appropriate for use in abstract. Is this data per person? Conclusions: In 2011, the mortality rate... Delete In particular; start with Child mortality... Rewrite the last sentence: Residence in a coastal zone was significantly associated with higher child mortality rates. Strengths and Limitations: This study integrates infant and child mortality data with GIS information to assess the influence of damages caused by natural disaster with child healthcare. Delete We employed; start "Longitudinal study of Comments on Introduction: Actually, large scale death from natural disaster is infrequent, at least in developed countries. Delete Particularly. Start with Infants and children...add a citation to show that this statement is true. Line 11: particularly among children in coastal zones. In 2011, the death rate of children under 10 years old in areas affected by the earthquake and tsunami increased by 40%. Line 23: Areas affected by the earthquake and tsunami generally had poorer Line 28: Although Hurricane Katrina and the Southern California wildfires (ADD YEARS TO EACH)...reinforced the need...in the U.S., as of 2011, the lack of regional disaster medical management plans in Japan...children at risk. Line 40: teams, which were launched

	Line 46: The sentence about the new liaison system that was established in 2016 should be moved to the discussion. Line 7: Again ob-gyn is an abbreviate for a medical specialty. The full term must be spelled out on first use, and the abbreviation given in ( ) Methods: Line 29: Delete traits and replace with characteristics Line 32: Delete trait and replace with topography Study design: Line 56: Delete the word large Line 7: Delete namely (three prefectures, namely, Iwate) Discussion: before, during, and after the 2011 earthquake and tsunami by sex, age group... I suggest deleting the specific information about Iwate from this section and starting the discussion with the the more general text on the next page - The results of this analysis indicate the need (delete s) for improving... Overall, the discussion should be edited to raise a single point from prior studies, and then explain how the findings of this study build upon those previously published findings. I suggest a major revision of the discussion. Lines 15 - 40: The discussion of water related disasters and death is misplaced here and likely irrelevant. Were the excess deaths you found associated with water exposure? It seems they were associated with accidents. The sentence on congenital abnormalities should also be deleted. You are not making a case for an association between the disaster and the abnormalities. Principal findings: Delete the word significant here. Do you mean statistically significant? If so, then say so, but do not use this word two times in two different wats in one sentence.

VERSION 1 – AUTHOR RESPONSE

Response to Reviewers' Comments

<For Reviewer #1 >

1. You demonstrated that the DBH located in a coastal area associated with the higher mortality rate, but it was not a surprising result since the coastal area was directly attacked by the tsunami. You must avoid estimating biased results.

And, many people were killed by the tsunami on March 11. Any medical services were not able to rescue their lives during the tsunami was striking. They could deliver their medical services after the disaster. That is, I recommend you also need to focus on days except for March 11 in 2011.

>Actually, as you mentioned, the association between coastal areas and high mortality rate is not surprising. We may have included biased results in our estimation. However, we focused on grasping the scale of impacts and believe that quantitative evaluation was meaningfully achieved in this study. We have added this consideration in the section on limitations.

Although we are sure that many people were killed on March 11, 2011, this study analyzed annual data. For 2011, this study included the annual mortality data of children. Thus, we do not only imply one time in point, but would rather like to suggest the entire annual impact by comparing the emergency and non-emergency periods. Additionally, the data were only annual data; thus, we could not focus on comparing mortalities on other days with one day (March 11, 2011). The data analyzed in this study were publicly-available ecological annual data. We did not collect data on a daily-basis and unfortunately could not find such data. We suppose that such data did not exist.

2. The analysis should control disaster damages in each SMA (e.g., attacked by the tsunami).

>As mentioned in the response above, we could not obtain data collected on a daily-basis and so could not control for tsunami attack. We mainly focused on the annual impact on mortality rate and location of SMAs in the frame of the ecological study.

3. Expand each abbreviation at the first mention. It was hard to follow your explanation.

>We have spelled out all abbreviations at first mention and used the abbreviations consistently throughout the remaining parts of the manuscript. It is easier to follow now.

4. P5, L17. Was "increased by 0.4-fold" a mistake? Should it be "1.4-fold"?

>We have rephrased the sentence as follows:

"Particularly among children in coastal zones, in 2011, the death rate of children younger than 10 years in areas affected by the earthquake and tsunami increased by 40%."

5. P10, L31. What is the "other data"?

>We have deleted the "*other data*."

"Other data" referred to data regarding sex, age group (0–4 years vs. 5–9 years), location of SMA, location of DBH, and prefecture, whereas the continuous variables were the number of DBHs, pediatric centers, and pediatricians per 100 000 population.

6. P20, L12. What is the difference between coastal zones and ocean zones?

>We have consistently used the "*coastal zone*."

<For Reviewer #2 >

This paper needs an English language editor to address clarity, sentence structure, and grammar. I have provided editor-like comments for the abstract and the introduction. I feel that the authors must seek an additional author or editor who can provide this level of feedback for the remainder of the paper.

>This manuscript has been rechecked for clarity, sentence structure, and grammar by a native speaker of the English language.

In general, rewrite to start sentences with the time range - for example, Between 2008 and 2014, the most common cause of death among children under 10 was accidents.
I do not understand what the authors mean by ob-gym and public health nurses data. Ob-gyn has not been introduced as an abbreviation and is not appropriate for use in abstract. Is this data per person?

>We have rewritten the sentence with inclusion of the time range.

Conclusions: In 2011, the mortality rate...
Delete In particular; start with Child mortality...
Rewrite the last sentence: Residence in a coastal zone was significantly associated with higher child mortality rates.

>We have deleted the phrase "*in particular*" and rewritten the last sentence.

Strengths and Limitations: This study integrates infant and child mortality data with GIS information to assess the influence of damages caused by natural disaster with child healthcare.
Delete We employed; start "Longitudinal study of

>As recommended, we have started the sentence with "A longitudinal study of …"

Comments on Introduction:
Actually, large scale death from natural disaster is infrequent, at least in developed countries.

Delete Particularly. Start with Infants and children...add a citation to show that this statement is true.

>As recommended, we have deleted "particularly."

Line 11: particularly among children in coastal zones. In 2011, the death rate of children under 10 years old in areas affected by the earthquake and tsunami increased by 40%.

>We have rewritten this sentence based on your suggestion.

Line 23: Areas affected by the earthquake and tsunami generally had poorer.

>We have rephrased the sentence as per your suggestion.

Line 28: Although Hurricane Katrina and the Southern California wildfires (ADD YEARS TO EACH)...reinforced the need...in the U.S., as of 2011, the lack of regional disaster medical management plans in Japan...children at risk.

>We have added each of the disaster years.

Line 40: teams, which were launched

> We have rephrased the sentence as per your suggestion.

Line 46: The sentence about the new liaison system that was established in 2016 should be moved to the discussion.

> We have rephrased the sentence as per your suggestion.

Line 7: Again ob-gyn is an abbreviate for a medical specialty. The full term must be spelled out on first use, and the abbreviation given in ( )

>We have spelled out all abbreviations at first mention and stated the abbreviations in parentheses.

Methods:

Line 29: Delete traits and replace with characteristics

>We have replaced "traits" with "characteristics."

Line 32: Delete trait and replace with topography

> We have replaced “trait” with “topographical features.”

Study design:

Line 56: Delete the word large

>We have deleted the word “large.”

Discussion

before, during, and after the 2011 earthquake and tsunami by sex, age group...
I suggest deleting the specific information about Iwate from this section and starting the discussion with the more general text on the next page - The results of this analysis indicate the need (delete s) for improving...

>As recommended, we have begun this section with: “The results of this analysis indicate the need to…”

Overall, the discussion should be edited to raise a single point from prior studies, and then explain how the findings of this study build upon those previously published findings. I suggest a major revision of the discussion.

>We have revised this section as per your suggestion.

Lines 15 - 40: The discussion of water related disasters and death is misplaced here and likely irrelevant. Were the excess deaths you found associated with water exposure? It seems they were associated with accidents. The sentence on congenital abnormalities should also be deleted. You are not making a case for an association between the disaster and the abnormalities.

>We have revised this section as per your suggestion.

Principal findings: Delete the word significant here. Do you mean statistically significant? If so, then say so, but do not use this word two times in two different wats in one sentence.

>We have deleted “significant” at the first instance; in the second instance, significant meant “statistically significant.”