Author's response to reviews

Title: A 10-year population-based nationwide descriptive analysis of pediatric emergency care

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Original Title: “The ecology of pediatric emergency care from 2000 to 2009 in Taiwan”
Revised Title: “A 10-year population-based nationwide descriptive study in pediatric emergency care”

Dear Editor:

Thank you for your message regarding the latest status of our manuscript. We appreciate the invaluable suggestions that you and the reviewers have provided, as well as the provisional acceptance of our manuscript.

In response to your invitation, we are pleased to re-submit our revised manuscript. The revised texts are indicated by the red font. Below also please find our point-by-point responses to the reviewers’ comments.

In addition, this manuscript had been reviewed and proofread by a native English editor for language considerations. Again, thank you for your kind consideration. We look forward to hearing from you.

Sincerely,

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Responses to Reviewer 1
Thank you very much for your thoughtful suggestions to help us improve the quality of our paper. We have made changes to our manuscript accordingly.

Comments
Minor revisions:
Methods could have been described in some more detail.
Answer:
We made added more detailed descriptions to the Methods section (please see text in red, pages 6-7).

Comments:
Title: The ecology of pediatric emergency care from 2000 to 2009 in Taiwan.
“Ecology” is not a appropriate word for this type of study.
Answer:
We changed the title to “A 10-year population-based nationwide descriptive analysis of pediatric emergency care”, which we think is more appropriate for this descriptive study.
The word “ecology” used in the “Abstract” and “Introduction” have been replaced accordingly.

Comments:
Grammar needs to be improved at some places ie “The disease pattern of 1-5 and 6-11 year-old children did not varied to any great extent.”
Answer:
The revised manuscript has been proofread by a native English editor for language considerations. The mentioned sentence has been edited accordingly.

Comments:
The data pertains to the period 2000-2009 presented is very good but its implications in effecting changes in the health care services needs to be discussed. Whether the data has been used to plan the health care services in terms of manpower and other resources would have been educative to readers from similar economic areas.
Answer:
We thank the reviewer for this reminder. We added a paragraph in the Discussion section (red text, page 17) regarding the importance of the study’s implications in health care service and its roles in pediatric health care and as reference of Asian children.
Responses to Reviewer 2
Thank you very much for the invaluable comments and thoughtful suggestions that helped us improve the quality of our paper. We have made changes to our manuscript accordingly.

Comments:
Background: I would encourage the authors to discuss in the background more on how the information their study seeks to generate could be used for practical purposes, such as targeted public health, medical, or policy interventions. The last sentence of the background should be in the methods, or if redundant, deleted.

Answer:
We sincerely thank the reviewer for this reminder. The targets of this study in public health and medical or policy intervention are important. We added these as follows: “A thorough investigation that includes hospitalizations is crucial for understanding current pediatric emergency care. Long-term clinical data reflecting the true state of the patients will be helpful in making health policy changes, improving health care quality, and designing new medical or policy interventions.” (page 5)
We also agree that the last sentence in the original Background is redundant, so it has been deleted.

Comments:
Methods: It would be helpful to explain why the data sets are from such a small sample of ambulatory (0.2%) and inpatient (5%) encounters. Particularly for ambulatory care, the small proportion of visits that are sampled might make it more prone to some systematic bias. It would be helpful to reference any published rationale for this sampling frame. The authors need to clarify whether emergency department visits would be captured in the ambulatory or inpatient claims.
The authors state that “findings were multiplied by 25 to represent the complete population because the data only covered 5 percent of the population.” This didn’t make any sense to me. Most commonly, the sample would be used to estimate population based rates of utilization and diagnoses. These rates with their associated errors could then be extrapolated to the total population. Alternatively, raw counts which the authors seem to be describing would presumably be multiplied by 20 for a 5% sample. The authors do not describe any statistical analysis or testing of their results.

Answer:
The random sample size of ambulatory (0.2%) and in-patient (5%) was according to the officially released systematic sampling file of the Bureau of NHI (BNHI) of
Taiwan for academic use. Since the numbers of ambulatory visits are extremely high, and the in-patients’ data are also very high, Taiwan’s BNHI has extracted data by systematic sampling method on a monthly basis, both for ambulatory patients (0.2%), and the inpatient (5%) data. (http://nhird.nhri.org.tw/en/Data_Subsets.html#S2). Extracted by monthly and absolutely random sampling, the data are reliably representative of the whole data. These data have been previously used for published epidemiology reports. We added some descriptions in the Methods section (red text, page 6).

The corresponding added references are:

Data on the emergency department visits were definitely included in the ambulatory datasets or in-patient claims because the medical providers should report these for payment from Taiwan’s BNHI. If the patient only had an emergency department visit without subsequent hospitalization, his/her data would be officially included in the ambulatory datasets. If the patient had an emergency visit and was hospitalized, his/her data would be shown in the in-patient datasets. However, data of hospitalized patients were only intact from 2004 to 2009 because the medical providers were strictly required to report patients’ emergency fees together with their subsequent hospitalization fee to the BNHI during this time (red text, page 7)

We apologize for the confusion. The text was revised as:
“If data was present on the ambulatory care expenditure without any record of subsequent hospitalization, these children were classified as non-hospitalized and values from the 0.2% ambulatory systematic sampling data were multiplied by 25 to represent the same percentage as the in-patient dataset covering 5% of the population.” (page 7)

The officially released ambulatory datasets are 0.2% of the total data and the in-patient datasets are 5% of total data (They are not the same percentage because the ambulatory numbers are very much higher than the in-patient data). We did not want to multiply the ambulatory data by 500, and the in-patient data by 20 to present 100% of whole data because this would lead to a larger estimation and variation. Instead, we chose to present all data as 5% of the original data (equal percentage of in-patient
datasets), so the data of 0.2% ambulatory data were multiply by 25 to become 5% estimated data of all cases. We have mentioned that the data were retrieved and corrected to be 5% of all cases from the random systematic sampling database in each table and figure. Although the presented 5% data included some estimated values, the distribution trend remained reliable.

Since some of the non-hospitalized data were estimated by multiplication (x25), we did not think it would be appropriate to do the statistical analysis. Therefore, we showed the distributive trend rather than the statistical significance.

Comments:
Results: It is unclear to me why the authors present results from 2000-2009 and from 2004-2009. They do not describe any rationale or added value for these different time breakdowns.
Presenting absolute counts is not very helpful. I would encourage the authors to focus their results on population-based rates. They describe an increase in the rates of emergency department visits over time, but there is no information presented to assess the statistical significance of these results.
I would encourage the authors to organize the results with topic headings or lead sentences that can lead the reader through the results. As currently written, the results are not well organized to help the reader understand where to look for specific results or why the authors are presenting specific results.

Answer:
We apologize for the lack of a detailed description. We added these in the Methods section as:
“However, because Taiwan’s NHIRD for emergency visits could not simply be combined with the hospitalization records of the years between 2000 and 2003, the case number was likely to be underestimated during the earlier time period. As such, the hospitalized case numbers were also calculated specifically for the period of 2004 to 2009 in addition to the period of 2000 to 2009, because the medical providers were strictly requested to report patients’ emergency fees together with their subsequent hospitalization fee to BNHI during this time.” (page 7)
“However, this might be underestimated. Specifically, the mean value of children requiring hospitalization from the emergency room was 1,381±90/100,000 children/year between 2004 and 2009, which was a more reliable value.” (page 9)

We agree with the reviewer’s opinion that the absolute count is not very helpful. Thus, we deleted Figure 1. Population-based rates, such as number of visits/100,000/year
were shown in Table 1.

The topics of Tables 2, 3, and 4 have also been revised to provide more relevant and comprehensive meanings.

**Comments:**
Tables: I found the listing of diagnostic codes in Tables 3 and 4 unhelpful. Please put the name of the diagnosis in the table. The use of the “5%” label on all the various findings was redundant and unnecessary. If the authors describe the sampling frame well in the methods, they do not need to label every result with an indication of the sample.

**Answer:**
We revised the contents of Tables 3 and 4 to present the diagnostic names rather than the ICD codes, as suggested. The description of 5% label in Tables 3 and 4 has also been deleted.

**Comments:**
Discussion: The discussion should focus on the unique findings from the study and key implications for medical practice, public health, and policy in Taiwan. Currently the discussion contains too much repetition of results.

**Answer:**
We appreciate the suggestions and have revised the discussion accordingly. We have also focused on the implications on medical and public health (please see the red text in the Discussion).

**Comments:**
**Quality of written English:** Needs some language corrections before being published

**Answer:**
This manuscript had been reviewed and proofread by a native English editor for language considerations prior to this re-submission.