Innovative Journal of Pediatrics
Volume 32 · Issue 5 · e121955

OPEN PEER REVIEW

Clinical Characteristics and Meteorological Factors Affecting the Use of Emergency Medical Services by Pediatric Emergency Patients: A Single-center Study (2005 – 2019)

Yechan Kyung, Sang Taek Lee, Haeng Seon Shim, Jeong Yeon Kim, Mi Hyeon Jin, Nak Gyeong Ko, Jun Hwa Lee

SUBMITTED	REVISED	ACCEPTED	DOI
19 Dec 2021	21 Jun 2022	15 Jul 2022	10.5812/ijp-121955

About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

More about open peer review: brieflands.com/knowledgebase/opr

Contents

1 Original submission 2
2 Revision 1 Referee 1 3
Authors' reply to reviewers 4
Reviewer and editor comments 9

1 Original submission

0 comments

No public comments in this round.

2

Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

===== Response to Reviewers ====

Reviewer 1:
The authors present a cross sectional study looking at the characteristics and meteorological factors affecting the use of EMS by pediatric emergency patients. While the characteristics of EMS patients has been reported in literature there is less known about pediatric population specially considering the meteorological factors.

Specific comments/questions:

1- “The rate of EMS use was higher among patients who were older, whereas it was reduced as the severity of disease increased” - does it mean that the more severe the disease, the less likely to use EMS?
➔ Thank you very much for your important comments.
We apologize for the mistake and have revised the contents as follows according to your comments.

Original: The rate of EMS use was higher among patients who were older, whereas it was reduced as the severity of disease increased.
Revised: The rate of EMS use was higher among older patients and increase with disease severity.

2- It would be interesting to see if is there any associations between monthly averages of meteorological variables and monthly frequencies of diverse diseases in the calls to the EMS?
➔ Thank you for your valuable comment.
In accordance with your comment, we provided additional text, Fig. 2, and a figure legend in the Results.

Results
Figure 2 shows monthly patterns of the number of patients using EMS due to the three most common disease types and the monthly averages of meteorological factors and air pollutants. The number of patients in the S/T group increased from spring, peaked in July to August, and decreased through winter; trends were observed in monthly average temperature and precipitation. On the contrary, the number of patients in the J group was lowest from June to August, increased from late autumn, and remained high until spring. This pattern is consistent with the trends of monthly average DTR and air pollutants except O_3.

Figure legend
Fig. 2. Monthly patterns of the number of patients using EMS due to the three most common types of disease (A) and the monthly averages of meteorological factors (B) and air pollutants (C).

3- The first EMS in the abstract (background) should be changed to the full phrase
➔ Thank you. We have corrected this.

4- Please summarize the methods section specially lines 77-86
➔ Thank you very much for your comments.
We have revised the contents as follows according to your comments.
We have erased several sentences describing the seasonal meteorological features (line number: 81-84) and population of Changwon
(line number: 84-86)

5- In the result section, when talking about significant differences, please mention the p-values. (Lines 147, 153-157, 159,172)
➔ Thank you for your valuable comment.
We added a P-value based on your comments.

6- Line 216-220 you are talking about the difference in the distribution of age and sex in 2 groups and the frequent suicide attempts in teenagers. while this statement is true in it self, how do you explain the finding in table 1, that the majority of your patients in both groups were between the ages 1-4? What was the most common disease type in this age range in both groups EMS and non-EMS?
➔ Thank you very much for your valuable comments.
We have revised the contents as follows according to your comments.

Added text and Table S1 to Discussion section
There was a higher proportion of children younger than four years in the non-EMS group, which might be associated with their light body weight and mild symptoms caused by respiratory infection. Attendance at a daycare center at a young age with an immature immune system can lead to frequent respiratory viral infections. The distribution of disease types for each age group produced such a trend (Table S1).

7- Line 241-243 talking about heavy adolescents, is not very clear. Please clarify
➔ Thank you for your comments.
We have revised and clarified this based on your comments.

Original: one of the reasons for why EMS use is more common among trauma patients may be that trauma occurs more often in adolescents who are too heavy to lift and move. Furthermore, depending on the situation, moving injured patients without stabilization is prohibited to avoid further injury.
Revised: The frequency of trauma caused by vigorous physical activities or use of transportation such as bicycles or motorcycles is likely high in adolescents compared to young children. In addition, adolescents are more difficult to move quickly due to their heavier body weights than young children. Furthermore, injured patients should not be moved without stabilization to avoid additional damage. We speculate these reasons for the more frequent EMS use in pediatric patients with injury than with disease.

8- There is no need to provide the same data both in the form of a table and figure (table 3 and figure 2). please omit one
➔ Thank you very much for your comments.
We removed the original Figure 2 and renumbered accordingly.

9- Please omit table 2, there is no need for the detailed information about each GCS score, specially when you have talked about it in detail in the main text and that more than 90% of the patients in all groups had full GCS score
➔ Thank you very much for your comments.
We removed the original Table 2 based on your comments and renumbered accordingly.

Reviewer 2:
Dear authors, thank you for your submission. followings are my comments on your manuscript:

1) In "Result" part of the "Abstract" you mentioned: "The rate of EMS use was

higher among patients who were older, whereas it was reduced as the severity of disease increase"; but in "Conclusion'" part of "Abstract" you concluded that "we found that older age, high severity, injury rather than disease, summer season, precipitation of more than 40 mm per day and high concentrations of O3 and NO2 might increase the risk of EMS use among pediatric emergency patients". There two paragraph do not match (about correlation of disease severity and the rate of EMS use).
➔ Thank you very much for your important and valuable comments.
We have revised the contents as follows according to your comments.

Original: The rate of EMS use was higher among patients who were older, whereas it was reduced as the severity of disease increased.
Revised: The rate of EMS use was higher among older patients and increased with disease severity.

2) You should mention in the "Materials and Methods" section that you will compare the EMS group with non-EMS group.
➔ Thank you very much for your comment.
We have added the following based on your comments.

Original: We investigated the impacts of clinical and meteorological factors on EMS use
Revised: We compared the EMS group and non-EMS group to investigate the impacts of clinical and meteorological factors on EMS use

3) "Result" section had substantial errors. The followings are some of them:
a) It is not clear that age distribution is significant in all age groups (based on table 1) or only in patients older than 10 years (based on manuscript).
➔ Thank you for your comments.
We added p values for each age group in Table 1 and revised the manuscript based on your comments.

b) Based on table 1, the "GCS score" was 15 (15-15) in both EMS group and non-EMS group; so, how the p value for this parameter was < 0.001 ?! (however later in the manuscript and also in table 2 you mentioned and compared the range of GCS between groups, but this data on table 1 is confusing).
➔ Thank you very much for your valuable comments.
In response to your comments, we have revised the content as follows.

Original: The median KTAS scores showed a significant difference of 3 and 4, respectively ($p < 0.001$), while the median GCS scores were the same as 15 in both groups. In the non-EMS group, almost all patients (99.7%) were gathered at the highest score of 15, whereas in the EMS group, about 8.4% of the patients were widely distributed except for 15 ($p < 0.001$). The percentage of patients who obtained 3, the lowest score, is 1.43% in the EMS group, which is significantly different from 0.02% of the non-EMS group.
Revised: The median KTAS scores of 3 in the EMS group and 4 in the non-EMS group showed a significant difference ($p < 0.001$), while the median GCS score was 15 in both groups. However, when this most frequent score in both groups (91.63% vs. 99.66%) was excluded, the median GCS score was lower in the EMS group (9 vs. 12; $p < 0.001$).

c) "p value" on "table 3" are missing!
➔ Thank you for your comment.
We have added P-values in Table 3 (revised Table 2) based on your comments.

d) In "table 4", the "SO2" parameter were"0.004 ± 0.002" in both EMS and non-EMS groups, and again the "p value" is noted <0.001!
➔ Thank you for your comment.
The following explanation has been added below the revised Table 3.

[a] These are indicated to the fourth decimal place to show the small differences in the mean and standard deviation of SO_2 between the two groups.

4) "Discussion" section is well-organized.
➔ Thank you very much for your consideration.

Reviewer 3:
1. Long abstract. Decrease to 250 word
➔ Thank you for your comments.
Based on your comments, we have reduced the abstract to 224 words.

2. Mention the type of study in method
➔ Thank you for your comment.
We have added this based on your comments.

Original: We reviewed the medical records of pediatric patients under the age of 19 years who visited the ED of Samsung Changwon Hospital between January 2005 and December 2019.
Revised: A single-center, retrospective, observational study was designed to identify the factors affecting EMS use. We reviewed the medical records of pediatric patients younger than 19 years who visited the ED of Samsung Changwon Hospital between January 2005 and December 2019.

3. There are grammatical mistakes in all article
➔ Thanks for your comment.
We received English proofreading from native English speakers.
Please refer to the attached English proofreading certificate.

4. Use related numbers (such as p-value or mean number) after some words such as “mean”, “compared”, “higher”, or etc in result
➔ Thank you for your comment.
We have revised this according to your comments.

5. In discussion, describe clearly some parts. For example “There was a clear difference between the two groups not only regarding the severity but also with respect to the type of their disease. In the EMS group, the percentage of trauma was significantly greater and that of respiratory disease was relatively less than in the non-EMS group, consistent with previous studies” and compare your findings with similar studies
➔ Thank you very much for your valuable comments.
Based on your opinion, we have revised the content to compare to similar studies.

Added sentences: Shah et al. conducted a study to analyze the factors associated with EMS use in pediatric patients (10). In their study, the distribution of patients by disease showed a significant difference between the EMS and non-EMS groups. In the EMS

group, musculoskeletal, trauma, and poisonings occurred in 54% of the patients, and respiratory disorders in 8%. However, in the non-EMS group, these respective percentages changed to 35% and 19%, reducing the difference between them. In addition, Dayal et al. analyzed pediatric patients younger than 14 years who visited seven EDs in northern California in 2013 (20). In their research, trauma and respiratory disorders accounted for 44.7% and 8.4% of respective cases in the EMS group and 27.8% and 14.3% in the non-EMS group.

6. After “The higher rate of EMS use in the disease group during summer compared to winter could be explained by an increasing proportion of infants and young children during winter who visit the ED using private vehicles for relatively mild symptoms caused by respiratory viral infection”, explain about easier moving in children due to having lower weight
“In our study, the utilization rate of EMS among pediatric patients was greater in the summer than in the winter. Increased outdoor activities during warm seasons may be one of the explanations for this trend”. What was found in other studies?
➔ Thank you very much for your valuable comments.
Based on your opinion, we have revised the content to compare to similar studies.

1) **Original:** On the other hand, respiratory diseases occur frequently in young infants and toddlers, which may be a condition that allows patients to be transported quickly using a private car without the help of EMS.
Revised: There was a higher proportion of children younger than four years in the non-EMS group, which might be associated with their light body weight and mild symptoms caused by respiratory infection.

2) Describe other studies on an increase in trauma patients visiting emergency departments in summer.
Added sentence: Park et al. investigated the incidence patterns of orthopedic fractures according to age and seasons among children and adolescents (21). In their study, fractures of the clavicle, distal humerus, and distal radius were significantly more frequent in summer than in winter. They attributed this to more frequent participation in outdoor activities in summer.

7. Limitation should be place after the conclusion
➔ Thank you for your comments.
We moved Limitations to follow Conclusions based on your comments.

2 Revision 1

1 comment · 8 Jul 2022

Referee 1 Reviewer

ACCEPT 8 Jul 2022

Dear corresponding author, thank you for your consideration. My comments from the first review were properly addressed, and the manuscript was corrected based on them.