Author’s response to reviews

Title: Determinants of inappropriate admissions of children to county hospitals: A cross-sectional study from rural China

Authors:
Shihan Lei (leishihan@hust.edu.cn)
Yan Zhang (yanzhang@hust.edu.cn)
Hao-miao Li (lihaomiao@hust.edu.cn)
Dai Su (sudai@hust.edu.cn)
Jing-jing Chang (jingee@163.com)
Xiao-mei Hu (huxiaomei@hust.edu.cn)
Qing Ye (yeqing@hust.edu.cn)
Di Jiang (jiangdi@hust.edu.cn)
Yingchun Chen (chenyingchunhust@163.com)

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Response to reviewers’ comments

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Dear editor and reviewer,

Thanks for your incredible work for reviewing our manuscript these months. Firstly, we would like to express our gratitude to you for your valuable input. Secondly we have made some revisions in accordance with your comments and advices, and would like to re-submit the revised manuscript.

Dear professor Hung-Hui Chen,

Our responses to your comments are below:
1. Line 158-169 "records appropriateness evaluation": Could you give more details regarding two judges, criteria, or checklist….? Since the final outcome of this research highly depends on the opinions of those two professional judges, authors should prove the confidence and background of those two judges as well as the process of the judgment, e.g. criteria or checklist. Such information is essential and necessary to support the correction of the results in this study and help convince readers.

Response: It’s a very good suggestion and we agree it’s necessary. Firstly, we’ve added a description of the relevant qualifications of professional judges in the study to further explain our confidence of the judgment (Line 175-179). Then, we’ve provided AEP criteria for county hospitalisation in the Appendix.

Line 175-179: There are three specially trained experts evaluated the medical records collected, all of whom are Ph.D. and have been involved in health policy research for more than five years. Experts’ rich of research experience and deep understanding of existing services in rural China enable them to make the fair judgment on records in strict accordance with standards.

2. Line 88-89 mentioned "50.2% of children in rural China chose to be treated in county hospitals, whereas only 7.3% chose to be treated in township hospital." Do you have the data of urban China to compare and further support the importance of the issue in rural China? Could you give a precise definition of "rural China"? How does distinguish the rural and urban? Authors mentioned the economic condition is the criterion without giving any detail.

Response: It’s a question. Firstly, we have added a conceptual definition of rural China and cities, and have further clarified the types of medical institutions in rural China (Line 87-92). In addition, by reviewing the literature again, we have found out the error in the manuscript, that is, the expression that “50.2% of children in rural China chose to be treated in county hospitals, whereas only 7.3% chose to be treated in township hospital” is incorrect. We have made corrections in this regard and added a comparison of relevant data between urban and rural areas (Line 95-100).

Line 87-92: On the one hand, urban areas include municipalities and prefecture-level cities; rural areas include county or county-level cities and their subordinate towns and village. Therefore, the establishment of medical institutions in China covers municipal hospitals, county hospitals, township hospitals and village clinics. The latter three of the above-mentioned medical institutions are rural medical institutions.

Line 95-100: Taking a prefecture-level city in China as an example, data shows that among the pediatric inpatients classified by municipal hospitals, county hospitals, township hospitals and private hospitals, the number of hospitalised children in county hospitals accounts for 50.2% of the total number of hospitalised patients; children hospitalized in municipal hospitals and township hospitals was 39.4% and 7.3% of the total number of patients, respectively.
3. The characteristics of physicians and hospitals may relate to inappropriate admission. Could you have other analyses about characteristics of medical institutions and doctors, as well as examination of the relationships between these variables and inappropriate admission? Moreover, I have curiosity about the related factors of inappropriate admission when adjusting the characteristics of physicians and hospitals.

Response: Thanks for your excellent concern. We have added Table 1 to introduce the basic situation of the sample hospital firstly (Line 146-147). Then, according to your suggestion, we found out the doctor's questionnaire we had done during the study. Since the doctor's questionnaire and the patient's medical record information both contain the doctor's name, we performed a database match based on it. Through screening, we finally selected 5 variables for chi-square test and regression analysis (Line 197-199). The results are shown in Table 4. Other corresponding language descriptions and table contents have also been modified in the revised manuscript.

Line 146-147: Table 1 shows the basic situation and service provision of the sample county hospitals in the year before this study was carried out.

Line 194-199: After obtaining the hospitals’ consent, we conducted a questionnaire survey of the doctors based on the doctor's name displayed in the inpatient medical records. The doctors’ information involved in age, educational background, their sense of the autonomy in clinical decision-making, the degree to which doctors believe that they can understand the patient’s feelings, the degree to which they think the tension in doctor-patient relationship.

Dear professor Roy Grant, MA,

Our responses to your comments are below:

1. Line 87: Change "According to statistics," to "Data show that".

Response: OK, we have changed "According to statistics," to "Data show that" according to your suggestion (Line 95-96).

Line 95-96: Taking a prefecture-level city in China as an example, data shows that…

2. Line 87ff: Please define "county" and "township" hospitals, focusing on their similarities and differences.

Response: Yes, we recognized it. We added the introduction of the concepts of municipal hospitals, county hospitals, township hospitals, and rural clinics by defining rural and urban concepts. Regarding the difference between county hospitals and township hospitals, this revision pointed out the leading role of county hospitals in rural medical institutions to show that county hospitals have higher medical service capacity than township hospitals; on the other hand,
because this study focuses on hospitalization services, we have emphasized the difference in the provision of inpatient services between county hospitals and township hospitals. (Line 87-95)

Line 87-95: On the one hand, urban areas include municipalities and prefecture-level cities; rural areas include county or county-level cities and their subordinate towns and village. Therefore, the establishment of medical institutions in China covers municipal hospitals, county hospitals, township hospitals and village clinics. The latter three of the above-mentioned medical institutions are rural medical institutions. Among them, county hospitals have the strongest capacity in providing medical services, so they play a leading role within counties. In terms of hospitalization services, county hospitals treat more kinds of diseases than township hospitals. Meanwhile, village clinics generally do not provide inpatient services.

3. Line 89: Children do not select county hospitals; they tend to be hospitalized at county hospitals.
Response: That's not what we meant, here we have adjusted our expression (Line 100-101).

Line 100-101: The tendency of children patients to hospitalise in county hospitals affects the rate of inappropriate admissions of children in county hospitals.

4. Line 102: What is "the suppliers' perspective"?
Response: It’s a good suggestion. What we want to express at here is that the studies of inappropriate admissions are usually derived from providers of inpatient services and the ultimate goal of these studies is to address policies and policy-induced health behaviors. We have adjusted our expression (Line 113-116).

Line 113-116: Most studies on inappropriate admissions of children were based on their medical records provided by hospitals. [6, 13-23] They mainly focus on evaluating the rate of inappropriate admissions, identifying the basic characteristics and influencing factors and further analysing health policies, hospital management system and health service behaviors behind them.

5. Line 117: The last sentence of this paragraph beginning "We assume…." Should be deleted.
Response: It’s our negligence. Combining your suggestion with the meaning we want to express in the text, we have adjusted our way of expression, that is, we have already put "We assume…." Replace it with “The research hypothesis of this study is that…” (Line 129-131).

Line 129-131: The research hypothesis of this study is that the appropriateness of child hospitalisation to county hospitals in rural China is related to the health policies and environments regarding children.
6. Line 258ff: This sentence and paragraph are unclear. What does "choosing the correct disease institutions" mean?

Response: It’s a question. Here we want to express that the focus of grassroots’ medical institutions is not to guide residents to choose the appropriate medical institution according to the priority of the disease. We have adjusted our previous expression (Line 290-292).

Line 290-292: However, most of the grassroots’ medical institutions in China focus on the provision of basic public health services projects rather than guiding patients to seek medical service reasonably.

7. Line 273 (and this paragraph): This could benefit from rewriting. What does hospital selection "due to the risk aversion" mean? Similarly, the meaning of "sensitive medical treatment mood" is unclear, as is the reference to "instability of outpatient infusion treatment" (Line 277).

Response: Thanks for your excellent concern, we agree it’s necessary. Firstly, we have added the definition of risk aversion. Secondly, we have pointed out how sensitive medical emotions are. Lastly, we have also indicated that the instability of outpatient infusion treatment means that it is likely to bring great side effects to children. (Line 300-308).

Line 300-308: Risk aversion refers to the strategy of taking the initiative to abandon or change measures to avoid the risks when the possibility of risk loss is high. Therefore, when children’s diseases symptoms which mostly manifest as long-term cold, fever, diarrhoea and abdominal pain are obvious, the parents tend to have their children hospitalised. Moreover, the relations between the doctors and patients are strained than before. Considering that parents are more sensitive to the treatment mood of children, that is, parents are emotionally unstable, uncontrollable and irritable when children are ill, and also that the instability of outpatient infusion treatment, i.e. the side effects of infusion treatment are great.

8. Line 280, heading. The phrase "Children's patients" is unclear. Does this mean "characteristics of children who were hospitalised inappropriately"?

Response: Yes, this means characteristics of children who were hospitalised inappropriately. We have adjusted our expression (Line 311).

Line 311: Characteristics of children who were hospitalised inappropriately

9. Line 284: By "rationality" do you mean "appropriateness" or whether the hospitalization is medically necessary?

Response: It’s our negligence. "Rational" is here referred to as "appropriateness". We have made further corrections here (Line 316-317).
Line 316-317: …the other variables had remarkable differences in the appropriateness of hospitalisation of the children.

10. Line 312: The sentence beginning "Residents in rural areas" should be deleted because it is too strong a generalization.

Response: It’s a question, we have already deleted "Residents in rural areas" according to your suggestion (Line 344-345).

Line 344-345: Because of lacking the mastery of medical expertise, children with less normal health status are less prone to inappropriate admissions.

11. The Discussion Section is too long and as a result your main points are not clear. I recommend that you shorten this section, clearly stating and focusing on your main points.

Response: It’s a very good suggestion. As yours recommend, we rebuild the discussion, and modified the sentences that are not sufficiently refined in language.

12. Line 365: I suggest substituting "effective" for "rational".

Response: OK, we have made linguistic adjustments based on your suggestions (Line 398).

Line 398: The grassroots’ medical staff can guide the parents’ effective medical treatment...