

Peer Review File

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Subject: Nutrition Status and Nutritional Practices in critically ill children: a single center study in China

Reviewer A

This is a good baseline study to share the insight of the current practice and nutritional status of critically ill children. A single center study may not be the study limitation. However, one limitation is there is no information about days of admission as your study noted the nutrition assessment was done starting from 10 days before patient discharged. Thus, it masked the factors affecting malnutrition status and/or anthropometry status (Table 3) of hospitalized children.

A: We carried out the assessment of nutrition at admission, not from 10 days before discharge. Sorry for the mistake, we revised it in the text.

1. I think you may consider to revise your results and discussion to ensure what you discussed are supported with your study findings. For example, L.147, you reported P3, which is not a common abbreviation, whilst your result presented Z-score of anthropometry status. In L.220 under conclusion, you have raised up a new finding on percentage of underfeeding and overfeeding, that I think the findings should be reported in result section.

A: Thanks for the suggestion, P3 was abbreviated from the third percentile, it was cited from the reference.

We did reported the percentage of underfeeding and overfeeding “Comparison of PEE with the total energy intake showed that underfeeding occurred on 799 days (48.5%), adequate feeding on 327 days (31.7%), and overfeeding on 523 days (19.8%)” in the result section. And we delete the describe in the conclusion.

2. Suggest considering the adequacy calorie intake between different feeding modes: Enteral Vs Parental Nutrition, in children due to the nutrient absorption rate, in conjunction with the PEE.

A: Thanks for the suggestion. We defined the energy adequacy, energy adequacy was calculated using EI (energy intake) to PEE ratio: underfeeding was defined as < 90%, adequate feeding as 90~110%, and overfeeding as > 110%.

3. Study will be more useful to compare malnutrition status (mild, moderate, severe) with clinical outcomes (e.g. Length of stay, medical expenses).

A: We had add the Table 4. And compared the clinical outcomes between different nutrition status at admission.

4. Suggest revising the written language to ease the reading and checking consistency in term used (e.g. clinical outcomes, clinic complication). May consider to define clinical outcomes/complication measured in your study
A: Thanks! We had check the language and revised it.

Reviewer B

1. What is the morbidity of Malnutrition in “Healthy control patient”. Is it a common phenomenon as well?
A: In this paper, we focus on the survey in PICU, and aim to observe the prevalence of malnutrition and feeding patterns in critically ill children; determine whether the total daily energy delivery was accordant with the energy and protein guidelines; identify the factors that were associated with suboptimal nutritional intake.
2. What is the inclusion and exclusion criteria for the enrolled patients?
A: Thanks for the suggestion. We had add the inclusion and exclusion criteria.
3. The author declared in the abstract that this is a prospective observational study, how is the data quality assessed. It is recommended that the study should be designed by an epidemiologist.
A: Thanks for your professional suggestion. We had discussed the data quality with epidemiologist, and assessed the enrolled patients number according the previous reported data (Malnutrition occurred frequently for children in pediatric intensive care unit (PICU), ranging from 35% to 72%).
4. In the results part of Line 101-122, where did the results come from? No additional tables or figures were referred.
A: We had add the Feeding methods, Feeding interruption (times) in table 2. And for the energy intake status such as underfeeding, adequate feeding and overfeeding, each account rate was only describe in the text.

Reviewer C

This study intends to observe the prevalence of malnutrition and feeding patterns in critically ill children, and determine whether the total daily energy delivery was accordant with the energy and protein guidelines and identify the factors that were associated with suboptimal nutritional intake in the first 10 days of nutrition therapy. The topic of this study is interesting. However, I have the following concerns which need to be addressed well.

Minor comments:

1. The language and grammar should be rechecked because of a large number of errors, especially in the Introduction and Discussion section. If the authors' native language is not English, I strongly suggest the authors have their manuscript

reviewed for clarity by colleagues or someone whose native language is English.

A: Thanks for the suggestion, we had polished the language and grammar of the manuscript.

2. In my opinion, all references number should in front of the full stop. (eg. It should be "...were closely related to malnutrition [1-7]." (line 35), not "were closely related to malnutrition. [1-7]"")

A: Thanks for the suggestion, we had revised them in the manuscript.

3. I have read the INSTRUCTION FOR AUTHORS of TP, and I notice they asked for Structured abstract for original article. I strongly suggest the authors read the INSTRUCTION FOR AUTHORS of this journal carefully before submitting.

A: We had revised the abstract according to the INSTRUCTION FOR AUTHORS of TP.

Major comments:

In my opinion, the major problem of this paper is the results do not fully support the purpose of this study.

1. The title of this paper is "Nutrition Status and Nutritional Practices in critically ill children: a single center study in China". However, I have to say that I did not see any "status" or "practices" in this paper at all. The authors did demonstrate the characteristics and protein intake of all 360 patients included in a Table 2 and Fig 1. But that's not the nutrition status, I think they have to dig more details about nutrition status of patients with or without malnutrition, and list them separately in a table. Plus, they had only 360 patients, I'm not sure if it's appropriate to use "Nutrition Status" or not.

A: Thanks for the suggestion, we think this was a single center and small-size study, which really did not expressed the nutrition status and practices, thus, we had revised the title of this article. The title was "Nutritional survey in critically ill children: a single center study in China"

2. And the authors declared the three purposes of this study in the introduction section:
 - a. observe the prevalence of malnutrition and feeding patterns in critically ill children;
 - b. determine whether the total daily energy delivery was accordant with the energy and protein guidelines;
 - c. identify the factors that were associated with suboptimal nutritional intake in the first 10 days of nutrition therapy.

To address these purposes, the authors shown details of the included 360 patients in Table 2; compared age, length of ICU stays between patients with or without malnutrition; compared nutritional status by HAZ, WAZ, and BAZ (Table 2) and prevalence of malnutrition between PICU admission and discharge of all patients

(line89-100). They recorded feeding patterns of the included 360 patients (line101-107). They recorded the comparison of PEE with the total EI (line108-112). They recorded the interruption frequency during enteral feeding and illustrated the reasons (line113-122). They recorded the percent of patients underwent enteral nutrition received estimated protein requirements, and displayed actual protein intake in Fig1.

I think the authors had addressed the first two questions, but I don't think that's enough. Indeed, they found the percent of malnutrition was significantly higher at discharge, but most importantly, I think the authors have to tell us why the percent of malnutrition was significantly higher at discharge, I think that's what the readers want to know.

A: Thanks for the suggestion. We described the interruption frequency and illustrated the detailed reasons. The data during hospitalization of PICU showed a worsening trend, there were statistically significant differences in WAZ, HAZ and BAZ in our study. We believed that nutrition depletion was associated with deficiencies of the daily calories and protein intake. In the first 10 days of enteral nutrition, there was 1.9 times feeding interruption per person. Invasive operation and imaging examination were the main barriers to deliver prescribed calories. On the one hand, prescription calories and protein have to be reduced because of clinical instability, feeding intolerance or fluid volume restriction; on the other hand, the prescribed energy was failed to deliver due to feeding interruption caused by imaging examination, intubation, extubation, etc. and we added table 3 for the factors that were associated with suboptimal nutritional intake in the first 10 days of nutrition therapy.

3. And I think the results did not address the third question at all. So, what exactly are the factors that associated with suboptimal nutritional intake in the first 10 days of nutrition therapy? I have no idea.

A: we had add the interruption factors in table 2, Analyzed the risk factors for worsen nutrition status during hospitalization in PICU in Table 5 . Although there were 31 patients transited to malnutrition from normal nutrition at discharge, but no significant factors were found to be associated with it, including feeding interruption, time to start EN, average energy and protein intake, calorie and protein compliance rate and number of feeding interruptions et al. Maybe the reason was that this was a small size sample and single center study. Analyzed the univariate variables related to death in critically ill children in table 6. But the malnutrition was not statistically different between survivor group and death group ($P = 0.379$). The following factors such as PRISM III, platelet count, number of organ dysfunction, comorbidities, nosocomial infection, plasma albumin level and plasma lactic acid level, were associated with the death group.

4. Judging from the results they demonstrated in this paper, I have to say that I don't think they addressed these three questions very well. Unless they can reform this paper and address these 3 questions, I do not suggest to publish this paper in TP journal.

A: Thanks for the suggestion, we had revised the manuscript according to your constructive opinions.