Reviewer’s report

Title: Dysphagia risk, low muscle strength and poor cognition predict malnutrition risk in older adults at hospital admission. Idah Chatindiara, I.Chatindiara@massey.ac.nz (corresponding author) Jacqueline Allen, jeallen@voiceandswallow.co.nz Amy Popman, amypopman@hotmail.com Darshan Patel, d.patel0245@gmail.com Marilize Richter, m.richter@massey.ac.nz Marlena Kruger, m.c.kruger@massey.ac.nz Carol Wham, c.a.wham@massey.ac.nz

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Reviewer: AM Namasivayam-Mcdonald

Reviewer’s report:

Major revisions

1. Introduction: I'm not sure there is a logical connection made between cognitive decline and ageing and dysphagia and malnutrition. I suggest you make these two concepts connect better, or take out the information about cognitive decline. I also think you've taken a leap in connecting poor grip strength to possible pharyngeal weakness. Even though grip strength has been correlated to tongue strength, this really may only have implications on oral dysphagia, but there's no strong evidence to suggest that this effects pharyngeal swallowing. Also, the tongue strength literature hasn't found strong association between tongue strengthening and swallow outcomes. To date, there is evidence to suggest that dysphagia risk is associated with malnutrition but we do not know for sure if dysphagia is associated with malnutrition in the elderly. Moreover, we don't know the direction of the relationship between dysphagia and malnutrition. As such, I think you need to change/reword your argument here.

2. At the end of your introduction you say that the aim of the study is: "to determine the prevalence of malnutrition risk in older adults at hospital admission. Furthermore, the study conducted an explorative analysis to investigate potential physical and health predictors of malnutrition risk." However, you didn't assess a wide array of physical and health predictors of malnutrition risk. I think you should be more specific in your aims about the factors that were assessed.

3. Page 3, Line 29: You state that Maori and Pacific participants are known to have a shorter life expectancy, and this is how you justify recruiting participants who are 55 years and older. Has it also been proven that this subset of the population starts to age earlier? It would be helpful to explain this a bit more within the manuscript.

4. Page 5, Line 16: Can you actually say that overall malnutrition risk prevalence is 73.5%? I would argue that cases of confirmed malnutrition shouldn't be included in this number. Can you also clarify whether people with known malnutrition were excluded from the
study? And if people with malnutrition that was previously diagnosed were included, were they being treated?

5. Discussion: I think reason for hospital admission needs to be considered in this study, especially if you are going to make statements like: "Two-thirds of participants required daily help with various tasks such as cooking, cleaning, showering and dressing. This may suggest loss of physical function among these participants, which may contribute to the low muscle strength and high malnutrition risk observed." There could be several reasons for needing help with activities of daily living that have nothing to do with malnutrition. Do you have reason for admission so you can flush this out a bit? I also think it would be helpful to understand what diagnoses were most associated with malnutrition/malnutrition risk. Even breaking down malnutrition risk prevalence by unit would be helpful. Older adults entering an acute care hospital combine to form a very heterogeneous group, consequently making it very difficult to make generalizations.

6. Table 2: In looking at the numbers for the EAT-10 screening, I'm not sure your findings are clinically significant even though they were found to be statistically significant, as the means are very close. I tried to calculate confidence intervals for each group (not at risk for dysphagia versus at risk), but not enough information was provided. I would be curious to know if the confidence intervals of the two groups overlap.

Minor revisions

1. Introduction: Given that many of the readers of your manuscript will be from outside of NZ, can you please provide details on the life expectancy from other countries, as well as why the aging population is a global problem?

2. Page 2, Line 7: Can you add some citations to support that ageing is a well-documented risk factor for hospitalization?

3. Page 2, Line 39: For readers who may not be familiar with the malnutrition literature, it may be helpful provide some examples of sociodemographic, psychological, physical and health factors contributing to malnutrition. Moreover, how do physical factors differ from health factors?

4. Page 5, Line 8: Please interpret for readers what a BMI of <23kg/m2 means.

5. Table 1: Double check how your rows and columns add up to 100%. Some are just under or over, so you may need to round some decimal places up or down.


7. Page 6, Line 55: Please cite "Reduced physical activity and functional decline commonly observed in older adults contribute to muscle atrophy and poor muscle strength."
8. Were able participants able to answer the EAT-10 on their own? Please clarify given the low MoCA scores.

**Are the methods appropriate and well described?**  
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**  
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**  
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**  
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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