Reviewer's report

**Title:** Implementation of grip strength measurement in medicine for older people wards as part of routine admission assessment: identifying facilitators and barriers using a theory-led intervention

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**Reviewer:** Andrea Maier

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Review response Manuscript BGTC-D-18-00010

This manuscript reports on the important topic of implementation of the measurement of handgrip strength as a screening tool in acutely admitted adults of 80 years and older. Using a mixed-methods design, implementation was reported feasible, rather successful and cheap. Main enablers were managerial support, creating a supportive environment to facilitate shared commitment and appointing ward champions. Implementation of care after screening of grip strength was not successful, since only 13% of patients with low grip strength received both ONS and physiotherapy.

The cohort includes 811 patients of whom 81% was able to perform the grip strength measurement. It is not mentioned in the manuscript how many patients were eligible for grip strength assessment, and what the percentage of inclusion is. It would also be informative to know how many patients were admitted to the wards during the implementation period.

Patients who were admitted to the ward for less than 3 days were excluded from the study (which is not mentioned at "setting and participants"). The reason for exclusion is unclear (what is the number of exclusions and the median lengths of stay of this group?) Were these patients discharged home or to a different department? Grip strength is a single measurement, therefore these patients could have been included.

Standardization of grip strength is a challenge. How was it standardized / which protocol was used? How many patients were not able to perform the handgrip strength due to limitations in performance (broken arms, severe pain etcetera)?

The standardized protocol for grip strength (Roberts HC et al. 2011) recommends 3 measurements of grip strength on each side. A recent study by Reijnierse et al. 2017 (Journal of Cachexia, Sarcopenia and Muscle) also reported that 3 measurements is preferable. Why did the authors choose 2 attempts per hand?
In the results, it is stated that measurements were mainly performed by the "ward champions", selected by ward managers. Table 7 reveals that in 4 out of 5 wards there was low shared commitment from staff other than the ward champions. How much of the successful implementation is only attributable to the ward champions as opposed to the 155 trained nursing staff? How many of the 655 grip strength measurements were performed by these ward champions? In the qualitative analyses, it is unclear how many of the 15 included staff members were ward champions.

The evaluation of the reported costs of the grip strength measurement during 12 months in the discussion section is limited. What is the cost-benefit of performing grip strength measurements in clinical practice. The advantages of performing grip strength measurements should be extended. However, a major limitation is the fact that grip strength is not sensitive to change and cannot be used to assess interventions, for which we have to deviate to muscle mass measurements. This should be mentioned in the discussion section.

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

No

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

Yes

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

Yes

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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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