Author’s response to reviews

Title: Handgrip Strength, Depression, and All-Cause Mortality in Korean Older Adults

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Author’s response to reviews:

(In Responses to the Reviewer’s Comments/Critics)

Again, we thank the editor and reviewers for giving us an opportunity to revise the manuscript. We did our best to address the comments/critics point-by-point. Our responses and corrections are highlighted in Yellow in the text and Tables. Five references are added and listed in the last page. The order of references is renumbered accordingly.

Q1) Now the Authors state that "depression was independently associated with increased all-cause mortality risk, and the association was magnified by low HGS in Korean older men but not in Korean older women…". This statement is not justified by the presented data. Crude HR is clearly increased in men with exposure to both low HGS and depression and this additive effect seems higher than in women (though no interaction statistics has been provided). However, it is the opposite with HR adjusted for confounders: the additive effect seems higher in women than in men. Statistical borderline significance in women is probably due to the differences in mortality rate which is much higher in men. Likewise, adjustment for several confounders may be misleading with limited number of deaths in women. Therefore, one can see from bilateral associations that both low HGS and depression contribute to increased all-cause mortality
(Tables 2 and 3) but stating anything more beyond "the relationships may be differently modulated by gender in this population and age group" is not justified.

ANS1) Thanks. We agree with the thoughtful comments. In response to the comments, the conclusions have been revised as follows in both Abstract, Results, Discussion, and Conclusion:

(Abstract)

“In women, however, the joint effect of depression and low HGS only remained significant at borderline (HR=2.603, 95% CI=0.981-6.908, p=0.055) when adjusted for all the confounders. Conclusion: The current finding suggested that depression and low HGS were significantly and synergistically associated with the increased risk of premature death from all causes in the Korean geriatric population.”

(Results)

However, the independent effect of depression or low HGS was no longer significant, while the joint effect of both depression and low HGS remained significant at borderline (HR=2.603, 95% CI=0.981-6.908, p=0.055) when adjustments for all the measured covariates.

(Discussion)

In women, the independent effect of depression and low HGS on the risk of all-cause mortality was not observed at statistical significance level, while the joint effect of the exposures remained significant at borderline even after adjustments for all the covariates. Together, the current findings suggest that depression as well as depression plus low HGS are significantly associated with increased all-cause mortality risk in Korean older adults.

(Conclusion)

“In men, both independent and joint effects of depression and low HGS were significantly associated with increased risk of all-cause mortality independent of all the covariates. Likewise, both depression and low HGS were also significantly and synergistically associated with increased all-cause mortality risk in women. Yet, the joint effect of the exposures only remained significant at borderline when adjusted for all the covariates. Considering the cross-sectional nature of the study, however, a further study will be necessary to investigate how the covariates influence the independent and joint effects of low HGS and depression on all-cause mortality in a cause- and-effect manner in Korean older adults.”
Other comments:

Q2) Aim of the study: why the Authors "a priori" know that low HGS and depression influence all-cause mortality - was this established in previous studies in Korean adults?

ANS2) Thanks for the comments. Low HGS and/or depression have been implicated with increased risks of age-related diseases in Korean adults. The aim of this study was based on recent findings reporting the diagnostic and/prognostic values of low HGS and depression in Korean populations, and the following statements are now added to Introduction in response to the reviewer’s comments;

“Like in Western countries, hand grip strength has been used as an important diagnostic and/or prognostic tool to identify older people with functional limitation and/or at increased risk of age-related diseases in Korea (Kim et al., 2018). For example, recent population-based studies showed that low HGS was significantly associated with increased risk of new-onset cognitive dysfunction (Jeong & Kim, 2018), increased 10-year cardiovascular risk (Lee et al., 2018), and impaired status of health-related quality of life (Oh et al., 2017). Using the 6th Korea National Health and Nutrition Examination Survey (KNHANES VI), Lee et al. (2018) showed that low HGS was significantly associated with an increased risk of depression in Korean adults aged 18-80 years.

Q3) Table 3: Death rate in depressed women: 122(3,4) - the percentage is probably wrong.

K-ADL has been adjusted for in the Table 4 but not presented in the Tables 1, 2 and 3.

ANS3) Thanks for the comments. Numbers and Percentages of Death are now corrected in Tables 1-3 (Please refer to Tables 1-3).

Q4) Editorial comments regarding a Declarations section.

ANS4) The following statement is now added to Methods:

The design of the Living Profiles of Older People Survey (LPOPS) has been described previously [20]. The Institutional Review Board (IRB) of the Keimyung University reviewed and approved the study protocol in accordance with the Declaration of Helsinki. All participants provided written informed consent to participate in the survey.
List of Added References


