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Appendix A. Supplementary data

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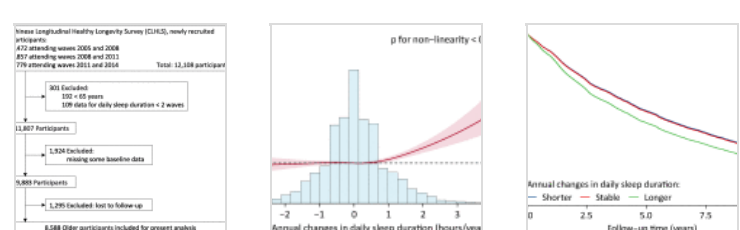


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Changes in daily sleep duration and subsequent risk of mortality among older people

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Highlights

- Annual changes in sleep duration are associated with mortality among older people.
- Longer changes of sleep duration are associated with higher mortality.
- Mortality risk increased significantly with longer than 1 h of annual changes.

Abstract

Background

Single self-reported measures of daily sleep duration are associated with adverse health outcomes; however, the association between changes in daily sleep duration and all-cause mortality has not been thoroughly evaluated among a large group of older people.

Methods

Using data from the Chinese Longitudinal Healthy Longevity Surveys, a total of 8588 older participants were included in the present study. Changes in daily sleep duration were assessed using annual changes, and Cox regression analysis examined the association of the annual changes with mortality.

Results

The median age of the study population was 82.00 (IQR: 72.00, 90.00) years, and 3974 (46.27%) participants were men. During a median follow-up period of 3.81 (IQR: 2.03, 6.74) years, 5100 (59.39%) deaths were recorded. After adjusting for initial daily sleep duration and other confounders, there was a non-linear relationship between annual changes in daily sleep duration and all-cause mortality. Annual changes were not associated with mortality before 0.0 h/year, and mortality risk increased after 0.0 h/year, specially after 1 h/year (adjusted HR: 1.32 per 1-hour/year increment, 95% CI: 1.18–1.47). Compared to the stable group (annual changes between –1 and 1 h), adjusted HRs for mortality were 0.98 (95% CI: 0.89–1.08) for the shorter group (annual decline more than 1 h) and 1.29 (95% CI: 1.19–1.41) for the longer group (annual increase greater than 1 h), respectively. Stratified and sensitivity analyses suggested robustness of the results.

Conclusions

The present study suggested there was a non-linear relationship between annual changes in daily sleep duration and all-cause mortality among older people: longer changes were associated with higher mortality; while, shorter changes were not associated with mortality. Specially, mortality risk increased significantly with longer than 1 h of annual changes. The findings highlight the importance of closely monitoring the changes in daily sleep duration among older people.

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Keywords

All-cause mortality; Older people; Change in daily sleep duration

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¹ Haiyan Ruan and Yi Zheng contributed equally to the article.

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