

Short-term mortality in the Danish Better Health in Late Life Cohort - A study on cohort representativeness



Morten Madsen*, Lars Pedersen, Julie A. Schmidt, Deirdre Cronin-Fenton, Henrik Toft Sørensen, Cathrine F. Hjorth

Department of Clinical Epidemiology, Department of Clinical Medicine, Aarhus University and Aarhus University Hospital, Aarhus, Denmark

*Contact: morten.madsen@clin.au.dk

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Background

Cohort populations obtained from surveys aim to mirror the general population (source population).

However, even with high response rates, the validity may be compromised by systematic differences in participation related to socioeconomic position (SEP) and chronic health conditions. The Danish Better Health in Late Life (BHLL) cohort was designed to facilitate pharmacoepidemiological studies. Linking to Danish registries enables extensive confounder control.

Objectives

We examined the representativeness of the BHLL cohort in terms of mortality compared with the general population. Additionally, we investigated the potential for achieving balance by incorporating covariates from health and administrative registries.

Methods

Among the 1,220,000 Danish residents aged 50-65 years, 25% were randomly invited to BHLL in the Fall 2021. Both respondents and the eligible general population were linked using a unique personal identifier to Danish registries. Data on covariates such as age, sex, recent hospitalization, Charlson Comorbidity Index score (CCI), prescription drug use, mortality, and SEP (education, income, employment status, cohabitation) were obtained.

We estimated the one-year mortality, and the crude and stepwise adjusted relative risk (RR) and 95% confidence intervals (CI) of one-year mortality using Poisson-regression. A RR=1 indicates balance (regarding mortality), while a deviation from 1 suggests residual or uncontrolled confounding in the model.

We conducted stratified analyses by sex, age, CCI score, recent hospitalization and drug-use.

Results

The BHLL cohort comprised 113,833 respondents (response rate 37%).

- The BHLL cohort differed from the general population, especially in sex, SEP and dental check-ups (Figure 1).
- The one year mortality was lower in the BHLL cohort than in the general population (0.31% vs 0.58%, Figure 2).

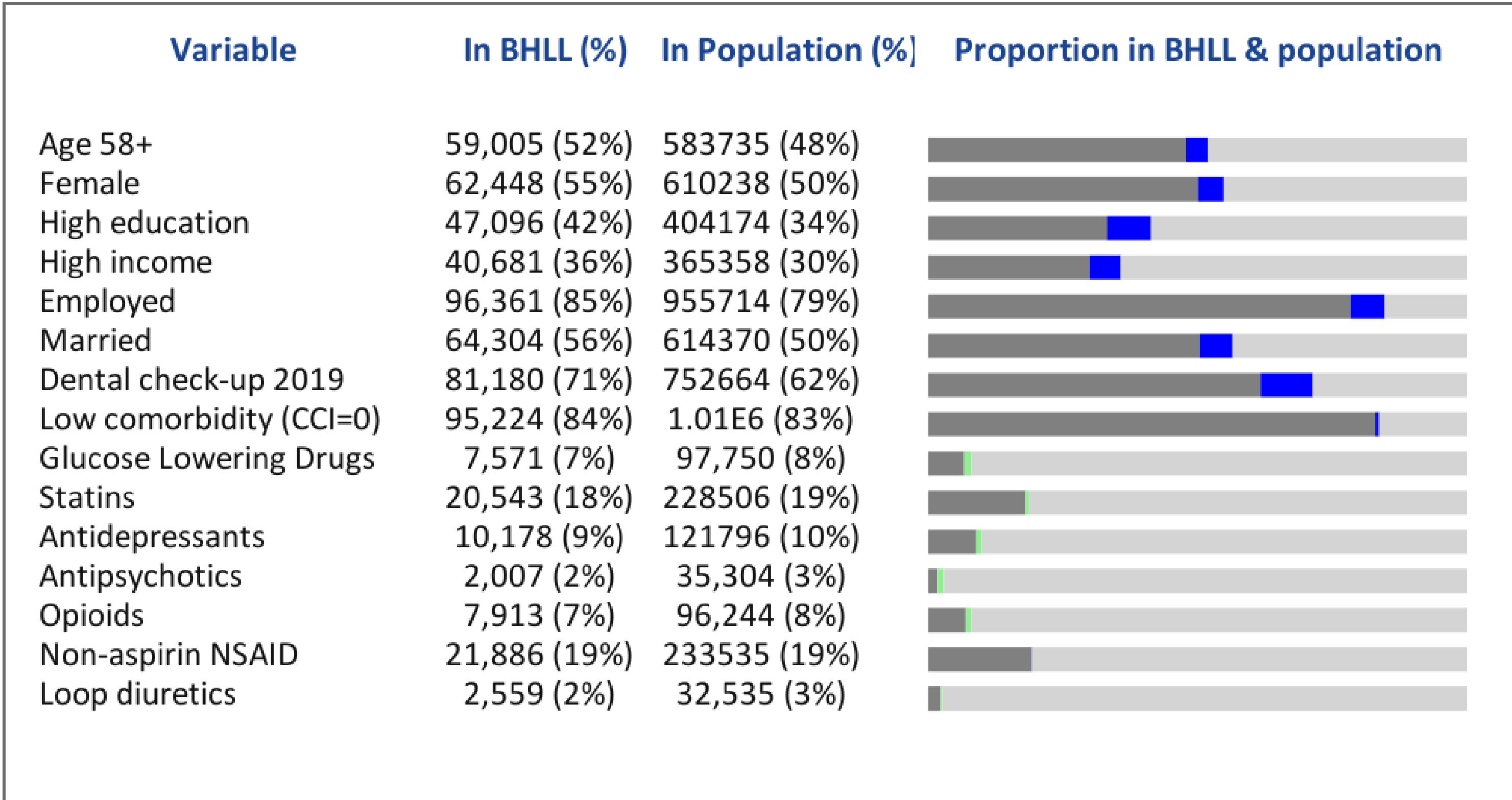


Figure 1. Distribution of selected covariates in BHLL and general population.

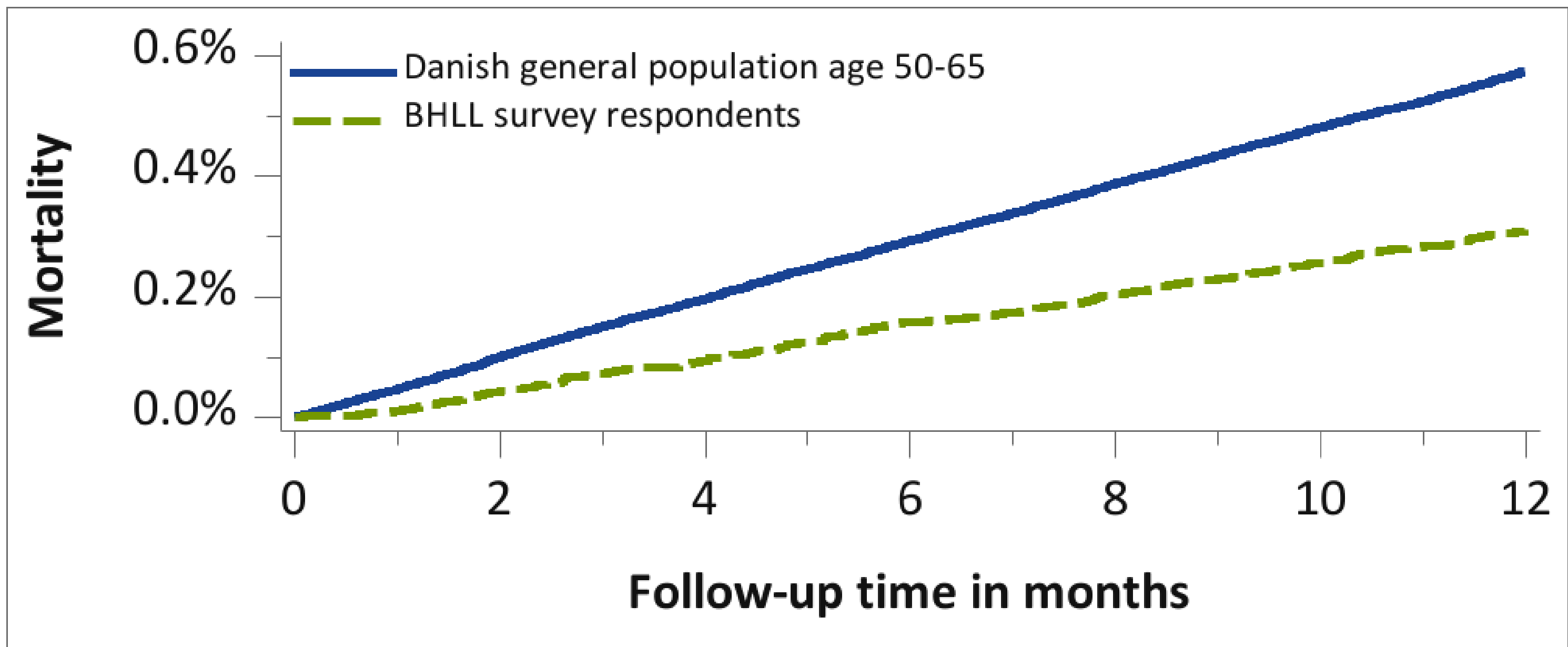


Figure 2: Crude mortality among BHLL survey respondents and in the general population.

- Stepwise adjustment partially reduced the potential biases arising from non-representativeness in the BHLL cohort. The greatest improvement was achieved by incorporating SEP (Figure 3).
- None of the strata achieved balance (Figure 4).

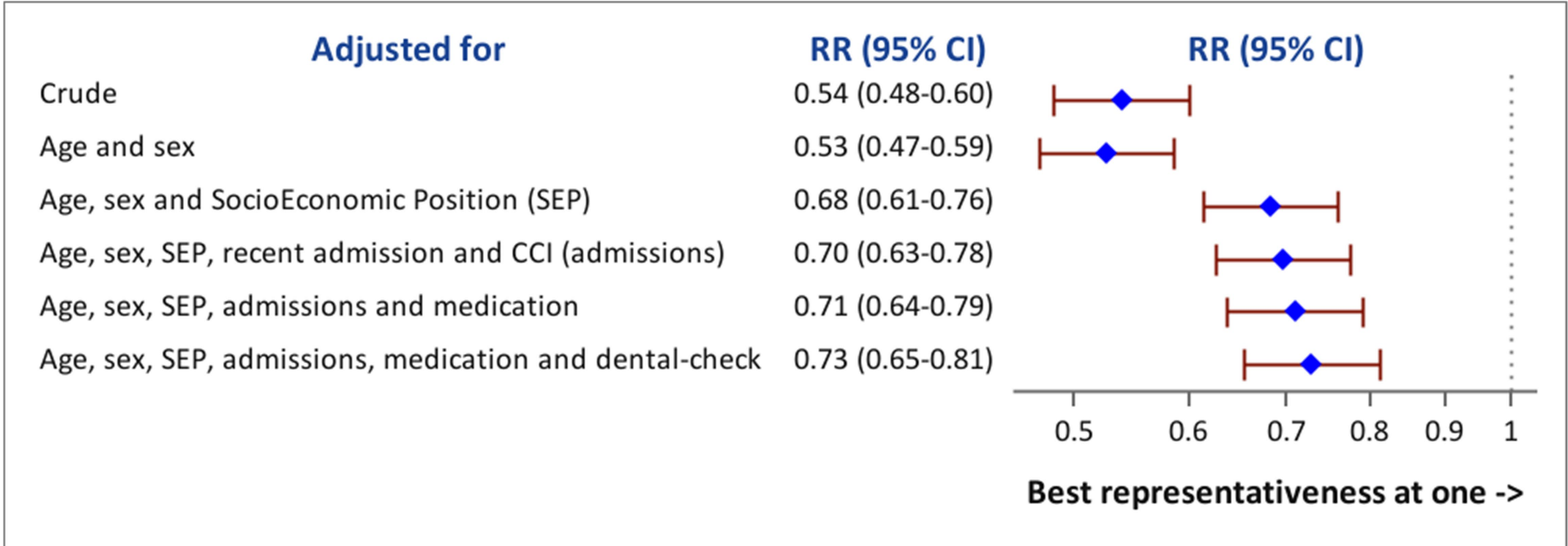


Figure 3: Stepwise adjusting in BHLL cohort.

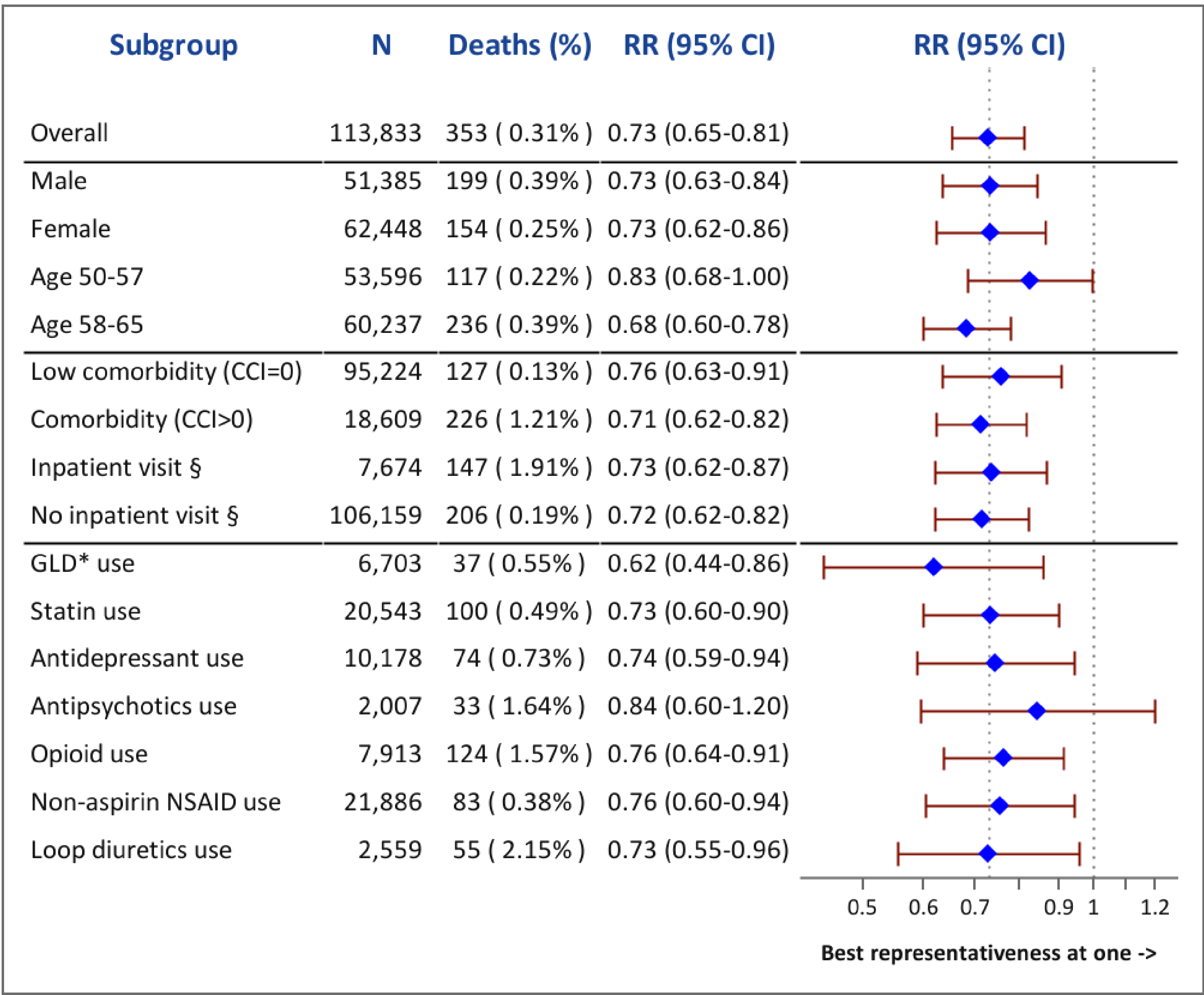


Figure 4. Subgroup analysis adjusted for final model.

* GLD = Glucose lowering Drugs
§ inpatient visits within recent year

CONCLUSION

Our findings showed a lower mortality rate among BHLL respondents than in the general population, suggesting presence of uncontrolled confounding.

This confounding can be reduced, but not eliminated, by adjusting for socioeconomic position and health conditions, or by stratifying to subgroups.

For background information about the survey, please consult the paper: “Cohort Profile: Better Heath in Late Life”:



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