

Role of age and sex in the association between BMI and functional limitations in stroke patients: Cross-sectional analysis in three European and US cohorts.

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Short title: BMI and functional limitations in stroke

Key words: stroke, BMI, limitation, ADL, IADL, mobility, chronic

DECLARATION OF INTERESTS

The authors have declared that no competing interests exist.

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ABSTRACT

Background

A U- or J-shaped association between BMI and different post-stroke outcomes is suggested. Thus, the aim is to evaluate the association between BMI with ADL, IADL and mobility limitations in the ageing post-stroke population at different ages, as well as the differences in this association by sex.

Methods

A total of 5,468 participants with stroke and 21,872 without stroke over 50 years of age were assessed for the number of limitations in basic or instrumental activities of daily living (ADL/IADL) as well as mobility tasks. The association between BMI at the interview (continuous time-dependent variable) and the level of limitations was assessed using a linear mixed model stratified by sex and stroke status.

Results

The association between BMI and ADL/IADL and mobility limitations were found to be significant in both men and women regardless of stroke status ($p < 0.001$ for all). The association differs between those who have suffered a stroke and those who have not ($p < 0.001$ for all). In ADL/IADL limitations, men with stroke showed a transition from an inverted J-shape to a U-shape association with age. In women, the BMI showed a less pronounced association between BMI and ADL/IADL limitations compared to men but with similar trends. A effect of sex was observed in the association between BMI and mobility, with women with and without stroke showing a linear association that differed from the inverted J-shaped or U-shaped association of men.

Conclusion

Our results suggest that BMI is associated with limitations in ADL, IADL and mobility in stroke patients. In addition, this association differs between men and women and is also influenced by age.

INTRODUCTION

Stroke is the second leading cause of mortality and the third leading cause of disability worldwide^{1,2}. As the number of older adult population is growing due to an increase in life expectancy, the number of people living with the sequelae of stroke is expected to increase by around 27% by 2050³. More than 30% of stroke survivors experience moderate-severe functional limitations following stroke⁴; these limitations increase with age faster than in the general population⁵.

Among the preventive factors for the incidence of stroke and other cardiovascular diseases is maintaining adequate control of body weight (BMI<25kg/m²)⁶⁻⁹. However, age influences the association of high BMI with outcomes such as mortality, where the association is reversed tending to reduce the risk of mortality in old age^{10,11}. Also, some studies have reported that patients with a high BMI after stroke may have lower mortality rates and better clinical outcomes than lean patients¹²⁻¹⁷. The association of high BMI with lower morbidity and better quality of life among other favourable clinical outcomes observed in old age is suggested to be sex-specific, where men show a higher protective effect of higher BMI than women¹⁸⁻²⁰. Regarding the association between BMI and functional limitations after stroke, previous studies have suggested a U- or J-shaped association observed in activities of daily living (ADLs)²¹⁻²³, patients with underweight and class II-III obesity showed higher limitations levels in ADLs than those with normal weight or overweight, while overweight patients tend to have lower levels of limitation²³. To our knowledge, other functioning outcomes such as instrumental activities of daily living (IADLs) or mobility have not yet been explored in post-stroke populations concerning BMI.

Despite the above findings, the literature on the association of BMI and functional outcomes post-stroke is quite limited, and the evidence remains unclear. In addition, age and sex are known

determinants of post-stroke limitations as well as modifiers of the effect of BMI on other clinical outcomes^{5,11}, however, their effects on the association between BMI and functional limitations have not been sufficiently explored. In addition, most previous studies focused on BMI categories without exploring their impact along with their full distribution, which could provide additional information. Therefore, this study aims to evaluate the association of BMI with ADL, IADL and mobility limitations in the ageing post-stroke population of different ages, as well as the differences in this association by sex.

METHODS

Study population

This study was conducted with data from three cohorts of people aged 50 and more: the Health and Retirement Study (HRS)²⁴, the Survey of Health, Ageing and Retirement in Europe (SHARE)²⁵ and the English Longitudinal Study of Ageing (ELSA)²⁶, which by design and implementation have comparable data²⁷. HRS is a representative study of the population born between 1931-1941 and 1942-1947 residing in the US. SHARE is a survey conducted in 27 countries in Europe and Israel which started in 2004 and includes about 140,000 individuals aged 50 and over. ELSA is a survey established in 2002, representative of the English population born before 1953. Details of these studies are provided elsewhere²⁴⁻²⁶.

This study included all wave first-ever stroke cases with data on limitations from 1996 to 2020 from HRS, from 2004 to 2020 from SHARE and from 2002 to 2018 from ELSA. Participants with prevalent or recurrent stroke^{28,29} were therefore excluded. Participants who presented an evolution of less than 1-year post-stroke (acute and subacute stage) were excluded given the variability in functional evolution during this period. A control group was constituted of individuals who reported no stroke during follow-

up for each participant with stroke, matched on sex, age (range ± 2 years concerning stroke onset), wave and survey.

Ascertainment of stroke

Stroke status and date of stroke onset were self-reported by the participant or proxies at each wave (every 2 years). The individuals were asked "Has a doctor ever told you that you had a stroke?" for HRS and "Has a doctor told you that you have any of the conditions on this card [indicating a history of health conditions]?" for SHARE and ELSA.

ADL, IADL and mobility limitations

Limitations data were drawn similarly and comparably in the three surveys³⁰. Participants or his/her proxy were asked if they experienced in the last three months any limitation in ADL, IADL or mobility due to physical, mental, emotional or memory problems. ADLs included dressing, walking across a room, bathing/showering, eating, getting in/out of bed, using the toilet, and urinary continence. IADLs included using a map, preparing a hot meal, shopping for groceries, using the telephone, taking medications, and managing money. The mobility task included walking 100m, sitting for 2 hours, getting up from the chair, climbing one flight of stairs, climbing stairs and stooping, kneeling, or crouching. Scores ranged from 0 to 7 for ADL limitation and from 0 to 6 for IADL and mobility limitations, depending on the number of limitations, with 0 indicating no limitations and 7 (for ADL) or 6 (for IADL and mobility) indicating that respondents were limited in all tasks. At each interview, a limitation score was calculated for all participants.

Body Mass Index (BMI)

BMI was calculated as the ratio of self-reported weight by height squared at each wave in the HRS and SHARE surveys (kg/m^2). In the ELSA survey, height and weight were assessed every 4 years by trained

personnel during clinical examination visits. Thus, BMI was estimated at each interview and considered as a time-dependent variable.

Sex, age, and covariates

Sex, age at the stroke, marital status and education level were extracted from the wave in which participants reported stroke onset and already had at least one year of post-stroke functional evolution. Age, health behaviours, and the number of self-reported comorbidities (heart problems, hypertension, diabetes, lung disease, arthritis, cancer, chronic pain, and sleep disorders) were extracted at each interview. Health behaviours included smoking status (non-smoker and current smoker), alcohol consumption in the past 6 months (abstainers [$<$ once a month], moderate drinkers [≥ 1 a month and < 5 days/week], and frequent drinkers [≥ 5 days/week]), and moderate to vigorous physical activity at least 3 times a week.

Statistical analysis

The inclusion wave in this study corresponds to the wave when the participants reported stroke for the first time and had at least one year of post-stroke functional evolution for stroke cases and the matched wave for their controls. The characteristics of the participants at inclusion were described according to stroke status and by BMI categories (underweight [BMI <18.5], normal-weight [BMI=18.5-24.9], overweight [BMI=25.0-29.9] and obesity class I [BMI=30-34.9], obesity class II [BMI=35.0-39.9], obesity class III [BMI >40]) at inclusion. A Pearson's chi-squared test was used to assess differences in sociodemographic variables, health behaviours and the number of comorbidities between the BMI categories. Differences in age and limitations in ADL, IADL and mobility between BMI categories were evaluated using an analysis of variance test (ANOVA). All statistical analyses were performed using STATA statistical software version 15.1 (Stata-Corp, College Station, TX).

Main Analysis

In this study, BMI data from each interview from the inclusion wave were used for analysis (time-dependent variable), both for cases and controls. The analysis of the association between BMI and the number of limitations in ADL, IADL and Mobility was performed in separate mixed linear models for each type of limitation with age as the time scale, including stroke cases and controls. To consider the possible variation between surveys and between individuals, random effects were included in the intercept at the survey level and in the intercept and slope at the individuals' level. BMI was included in the model as a continuous and time-dependent variable (BMI data at each interview concurrent to the measure of limitations). A sequential exploration of the association was performed for each type of limitation starting with a model including linear, quadratic, and cubic terms for BMI and age and their interactions. The quadratic form for BMI and age was found to have a better fit based on BIC and AIC information and was retained for the analysis, the shape of the association remained similar compared to more complex models. Stroke status (cases vs controls), and this interaction with BMI and age (stroke_statusXBMI, stroke_statusXBMI², stroke_statusXage, stroke_statusXage², stroke_statusXBMI²Xage) were included in the model to assess the difference in the association of BMI by stroke status. An interaction between sex and BMI was found for ADL and mobility limitations ($p < 0.001$ for all), and an interaction between sex and BMI and age for all outcomes ($p < 0.001$ for all), leading us to stratify analyses by sex. The models were additionally adjusted for sociodemographic variables (education, marital status, age at stroke onset and year of birth) and health behaviours and the number of comorbidities as time-dependent variables.

Sensitivity analysis

To evaluate the robustness of the results, several sensitivity analyses were performed: 1) the main stratified analysis was repeated for each cohort to evaluate the possible influence of each survey on

the main results; 2) After the stroke, cases with higher levels of limitation may have a higher probability of mortality^{31,32}. The population in this study for whom death was reported showed higher levels of limitation than the rest of the population (mean (SD) of limitation score: ADL= 1.82 (2.15) vs 0.80 (1.51); IADL= 1.34 (1.83) vs 0.62 (1.30); Mobility= 3.46 (1.78) vs 2.23 (1.97) respectively; $p < 0.001$ for all). Therefore, we cannot exclude the probability that stroke cases surviving beyond the subacute phase are those with a lower level of limitations. To evaluate the effect of mortality on the results, the main analysis was replicated by excluding all cases and controls from whom death was reported during follow-up; 3) The time after stroke is associated with an increase in functional limitations in stroke patients, especially after 6 years post-stroke where periods of stable functional limitations have been observed. The three surveys have different follow-ups in the stroke population (mean (SD) for HRS: 6.7 (5.2), SHARE: 3.9 (2.7) and ELSA: 5.7 (3.8)), which does not allow us to discard the influence of differences in post-stroke functional evolution in the cases. Thus, we repeated the analysis and stopped the follow-up at 6 years post-stroke (median of evolution time). Finally, a post-hoc analysis was performed to assess the influence of BMI changes during follow-up on the association of BMI with limitations. The main model was replicated with participants who had at least two BMI measurements during follow-up ($n=1\ 925$) adding as an adjustment variable the difference between the immediately preceding BMI measured and the BMI at interview.

RESULTS

Of 190,590 participants in the 3 surveys, 61,374 participants were excluded because of missing data on ADL, IADL, mobility limitations, BMI, or covariates (comparison between participants excluded and not excluded due to missing data in Table S4). A total of 129,216 participants with complete data were available, of whom 13,202 reported having had a stroke. 7,734 of the stroke cases were excluded because the date of the stroke was before survey inclusion, had more than one stroke, or presented

less than one year after the date of the stroke (Figure 1). Finally, 5,468 stroke cases with at least 1 year of follow-up were retained in the analysis, with 4 controls for each stroke case (21,872 controls).

Population characteristics

Table 1 shows the characteristics of the participants according to BMI categories (underweight, normal, overweight and obesity class I, II and III) at the inclusion wave of the analysis, corresponding to the wave when the participants reported stroke for the first time (mean (SD) = 3.0 (2.3)) years post-stroke) and the matched wave for their controls. In general, a U-shape association was observed between participant characteristics and BMI classes. Compared to those in the normal weight group, those in the obese and underweight groups were more likely to be women, participants with a lower mean age concerning the other groups (except to underweight), single/divorced/widowed participants, those who did not smoke or drink alcohol, and those who did not report performing MVPA at least 3 times per week ($p < 0.001$) in both stroke cases and controls. Those who reported 3 or more comorbidities in both cases and controls were more likely to be in the obesity and underweight groups. Education was not found to be associated with BMI categories in stroke cases. Concerning ADL and Mobility limitations, a U-shape association was also observed in both cases and controls, where the obesity group and the underweight group showed a higher limitation score than the overweight group, with the underweight group having the highest score ($p < 0.001$ for ADL and Mobility limitations). The IADL limitation score was higher in the underweight group than in the other groups, in both cases and controls ($p < 0.001$).

ADL limitations

An association between BMI and ADL limitations score was found in both men and women regardless of stroke status ($p < 0.001$ for BMI and p for interaction between stroke status x BMI x age < 0.001 for both men and women, Figure 2). In men that reported a stroke, an inverted J-shaped association was observed in the age range of 50 to 70 years. At age 50 those participants with stroke and a BMI close to 27-37 kg/m² showed the lowest levels of ADL limitation score (ADL limitation score mean (95% Confidence Interval (CI)) = 1.46 (0.94 - 1.97) at age=50 and BMI= 33, Table S1). This pattern remained broadly stable until age 70. After age 70 the association between BMI and limitation began to take on a U-shape until age 90. The association in stroke-free participants showed a consistent U-shaped association at all age ranges. Participants with a BMI between 29-33 kg/m² showed the lowest levels of limitation in the age ranges (ADL limitation score mean= 0.46 (0.15 - 0.85) at age=65 and BMI= 33, Table S1).

The associations in women were different than in men, the inverted J and U-shape were less marked in all ages (Figure 2). The association between BMI and ADL limitations was shown to be different between stroke and stroke-free women ($p < 0.001$). In women with stroke, at age 50 the mean ADL limitation score is lower in those participants with a BMI between 27 and 39 kg/m² (ADL limitation score mean= 1.39 (0.78 - 2.00) at age=50 and BMI=39, Table S1). The BMI range with the lowest ADL limitation score decreased as age increased, with the BMI range of 25-31 kg/m² showing the lowest levels of limitation after age 70 (ADL limitation score mean= 2.88 (2.40 - 3.35) at age=90 and BMI=29, Table S1). In stroke-free women, no influence of BMI was evident in the age range of 50 to 60 years, at 65 years BMI showed a U-shaped association with the lowest levels of ADL limitations in the BMI range of 21 to 33 kg/m² (ADL limitation score mean= 0.54 (0.09 - 1.00) at age=65 and BMI=27, Table S1). This U-shaped association was observed up to the age of 90 in stroke-free women.

IADL limitations

The IADL limitation score was shown to be associated with BMI among both stroke and stroke-free participants regardless of sex. ($p < 0.001$ for BMI and p for interaction between stroke status \times BMI \times age < 0.001 for both men and women, Figure 3). In men with stroke, a consistent inverted J-shape association was observed between BMI and IADL limitations, the association being less pronounced in the age range between 50 and 70 years (IADL limitation score mean = 0.86 (0.43 - 1.31) at age = 50 and BMI = 37 and IADL limitation score mean = 0.47 (0.31 - 0.63) at age = 70 and BMI = 37 and, Table S2). In stroke-free men, the association between IADL scores and BMI showed an inverted J-shape association, but less pronounced compared to stroke participants (Figure 3). In the stroke-free participants aged 50-55 years, only participants with a BMI around 15-17 kg/m² showed high levels of limitation (Table S2). Between the ages of 60 and 75, BMI between 37-39 kg/m² showed the lowest levels of limitations compared to other BMI ranges (IADL limitation score mean = 0.11 (-0.04 - 0.26) at age = 70 and BMI = 39). After age 75, the lowest levels of limitation were in the BMI range of 29 to 37 kg/m².

This association showed similar trends between men and women with stroke, with the lowest levels of limitation in the BMI range of 31 to 39 kg/m² (Figure 3, Table S2). However, the levels of limitation were lower compared to men. Stroke-free women also showed lower levels of limitation in the BMI range of 31 to 39 kg/m², however, women in the stroke-free group showed no difference in the level of IADL limitations according to BMI in the age range of 50-55 years ($p > 0.050$). In contrast to men, women showed an association between IADL limitations and BMI that could be considered linear in the younger age ranges, with a higher level of BMI associated with a decreased level of limitations. However, the differences in limitations between the highest and lowest levels of BMI were less pronounced in women than men (maximum difference of IADL limitations between BMI = 39 and BMI = 15 at age 50 in women and men: stroke = 0.822 vs 2.257 and stroke-free = 0.616 vs 0.308 respectively).

Mobility limitations

BMI was found associated with mobility limitation scores in all ages, in men and women and stroke and stroke-free participants ($p < 0.001$, Figure 4). A difference in the association was observed between men with and without stroke, with stroke participants showing the lowest levels of mobility limitations in BMI above 33 kg/m^2 and those without stroke showing the lowest levels of limitation in BMI ranges above 29 kg/m^2 (Figure 4, Table S3, p for interaction between stroke status \times BMI \times age < 0.001). In addition, an inverted J-shaped association between BMI and mobility limitations of stroke participants was observed at the early age ranges, which becomes a U-shaped association at older ages (Mobility limitation score mean = 2.57 (1.84 – 3.30) at age=50 and BMI=33 and mobility limitation score mean = 3.14 (2.50 – 3.78) at age=90 and BMI=27). In stroke-free participants, the association remains U-shape in all age ranges with the lowest levels of limitations in BMI ranges between 25 and 29 kg/m^2 (mobility limitation score mean = 2.43 (1.81 - 3.05) at age=70 and BMI=25).

The pattern of association was different in women compared to men (Figure 4). In each age group, the association showed linear trends, in which increased BMI was associated with a higher mobility limitations score. Women with stroke showed no significant difference in limitations at age 50 between BMI levels; after this age, the lowest levels of limitations corresponded to BMI ranges between 15 and 21 kg/m^2 (Table S3). Women without stroke showed similar trends to women with stroke, where the lowest levels of limitations were found in the BMI ranges between 15 and 21 kg/m^2 (Figure 4, Table S3).

Sensitivity Analysis

In the stratified analyses by survey, the results were similar to the main analysis. Differences by sex and between stroke and stroke-free participants have been maintained as well as the influence of age (Figure S1-S3). The results of the analysis without cases and controls reporting mortality during follow-up were also consistent with the main findings (Figure S4). Analyses with a 6-year post-stroke follow-up period showed similar results to the main results discarding the

influence of the difference in the follow-ups of each survey (Figure S5). Finally, the post-hoc analysis showed similar results between the BMI and the limitations, after adjusting for the change between the BMI immediately before and after the interview (Figure S6).

DISCUSSION

This cross-sectional study with 5,468 stroke cases and their controls shows an association between BMI and limitations in ADL, IADL and mobility in different age groups after the age of 50 years. The results suggest that this association differs between those who have suffered a stroke and those who have not. In men with stroke, limitations in ADLs, IADLs and mobility showed an inverted J-shape with BMI at age 50, then this association became U-shaped around age 70 where participants with a BMI between 29 and 30 kg/m² showed the lowest predicted level of limitation. In stroke-free men, the association between limitations and BMI remained U-shaped in all age ranges with the lowest level of limitation predicted in a BMI range between 31 and 33 kg/m². In women, the association between BMI and limitations in ADLs and IADLs retained the same forms of association in both stroke and stroke-free participants with the lowest level of limitation predicted at a BMI between 27 and 31 kg/m² after 70 years of age. In contrast to men, the differences in limitations were less pronounced between the different BMI ranges. A pronounced effect of sex was observed in the association between BMI and mobility limitations, in which women showed a linear association that differed from the U and inverted J-shape association of men. Finally, our results show that the association between BMI and limitations is age dependent and with increasing age, the association is more accentuated.

Comparison with previous studies

Previous studies on individuals with stroke history had reported a U-shape association with outcomes such as mortality, hospitalization or recurrent stroke¹⁵⁻¹⁷. Regarding functional outcomes, studies have reported better functional recovery^{13,14} and better performance of ADL activities²¹⁻²³ after stroke in the sub-

acute phase among those with higher BMI. The protective effect of a high BMI is not yet clear, but previous studies have shown that the association between obesity and increased mortality disappears after adjusting models for factors such as C-reactive protein and fasting insulin levels³³. In addition, other studies have shown a possible protective effect of lean mass, as a proportion of BMI, and creatine kinase levels on functional outcomes. Thus, adults with a high BMI who have a high proportion of lean mass and high levels of creatine kinase may have better functional outcomes than those with a low BMI³⁴. Our findings show similar trends, participants with higher BMI showed low levels of limitation in ADLs, and IADLs. However, our results contrast with the previous ones by showing a different trend in mobility tasks, where high BMI was associated with mobility limitations only in women, suggesting a sex effect in mobility tasks that were not observed in ADLs and IADLs. These differences may be mainly due to modelling the limitations with a continuous BMI as well as age. Additionally, the limitations of IADL and Mobility to our knowledge have not been explored. Previous studies have reported a sex difference in the association between BMI and mortality^{19,33,35}, heart failure²⁰ and quality of life¹⁸: men showed a more favourable impact of a high BMI on these outcomes than women. Consistent with previous studies, our results also found these sex differences in the association between BMI and limitations in ADL, IADL and mobility. For these functional measures, high BMI was associated with lower levels of limitation in men than in women. Although the mechanisms that explain this sex difference are not yet clear, one study proposes an anti-inflammatory effect of obesity, which may be protective and more important in men than in women³⁶. In addition, a sex effect was also reported in the association between fasting insulin and C-reactive protein and mortality, showing that C-reactive protein and fasting insulin confounded the association between mortality and BMI, and that the levels of these two factors were reversed between men and women with high BMI³³. Menopause is another biological factor to take into account, since it is associated with the incidence of cardiovascular diseases³⁷ or metabolic syndromes³⁸, and personal factors such as body image or cultural perceptions¹⁸ may also be mechanisms that influence the performance in ADL or mobility tasks. Finally, BMI does not reflect the difference in body composition between men and women³⁹. Men are more likely to accumulate adipose tissue in the trunk and

abdomen, while women are more likely to accumulate adipose tissue in the hips and legs, which may be a possible factor influencing motor function linked to gait^{40,41}. Our studies also showed a U-shape association between age and BMI that to our knowledge had not been reported previously. In these, the youngest (<60 years) and the oldest (>80 years) participants showed the highest levels of limitations. In younger patients, previous studies have reported a late diagnosis of stroke, which may be associated with a late onset of acute stroke, leading to more severe lesions.⁴² On the other hand, the occurrence of stroke in young adults is also associated with comorbidities strongly associated with loss of autonomy such as diabetes, dyslipidemia and obesity⁴². Concerning the elderly participants, the loss of autonomy associated with the effect of age, and a possible frailty bias during treatments in the acute and subacute phase could explain this increase in limitations⁴³.

Strengths and limitations

This study aims to provide more insight into the association between BMI and functional limitations. Therefore, we considered age and sex as potential modifiers of the association between BMI and functional limitations. Similarly, this study based on more than 5000 people with a single stroke report, allowed a reasonable number of participants to stratify the analyses by sex while maintaining the robustness of the findings. The association of BMI with functional limitations was compared between stroke participants and their controls to evaluate the potential differential effect in the stroke population at different ages. Our findings should also be considered regarding their limits. 1) Information on stroke subtypes was not available, and the diagnosis of stroke and comorbidities was based on self-reports. However, comparative studies between self-reports of chronic diseases (e.g. stroke) showed prevalence with 96% agreement between the two sources⁴⁴, and another study showed sensitivity ranges of 36-98% and specificity ranges of 96-99% between self-reports and medical records⁴⁵. Nevertheless, an underrepresentation of participants who did not present clinical sequelae after stroke (false negatives) cannot be described in our data. 2)

The data on dementia diagnosis was not available before 2010 for HRS, which did not allow to account for this information in the analysis. 3) Our results showed a U-shape that had not been previously evidenced, however our socio-economic study data do not allow us to have enough clinical information to evaluate this association in more detail. 4) Comorbidities are an important factor in the study of functional limitations, so we adjust the models to the number of comorbidities at the time of the interview. However, this approach may underestimate the individual impact of each comorbidity separately. 5) Previous studies have observed that fasting insulin, C-reactive protein, and lean mass levels are factors that would modify the association between BMI and functional outcomes^{33,34}. Unfortunately, our analyses were not adjusted for these factors because of the absence of these data. Future analyses should be adjusted for these factors. 6) Finally, the data came from three different surveys, which did not have mortality data for all participants and had different follow-ups of the population, however, sensitivity analyses to account for these caveats showed findings similar findings to the main results.

Clinical Implications and future research

In the follow-up of the health status of stroke patients, the level of functional limitations, as well as the BMI, can be a useful measure of the general condition⁴⁶. Our findings suggest that this follow-up should be carried out considering that the association between BMI and functional limitations may differ between men and women as well as being influenced by age. In women with a high BMI, it is associated with limitations in mobility tasks, which is not observed in men. Similarly, after 70 years of age, obesity decreases its positive effect, tending to have a negative effect after a BMI of 33 kg/m². Therefore, our intention is not to encourage weight gain in stroke patients, given that elevated BMI is associated with chronic conditions such as diabetes that may aggravate the health status of patients after stroke⁹. In addition, our results do not suggest that the association between BMI and functional limitations is causal, for which further analyses are required and may be explored in further studies. Rather, we suggest that BMI may be an indicator of the level of autonomy of the patients (decision of their

diet, without control by a third person). In addition, BMI may also be an indicator of other chronic conditions in ageing associated with weight changes and functional limitations such as frailty⁴⁷. In the post-hoc analyses the change between the BMI immediately prior to the interview and the BMI at the interview was shown to be associated with functional limitations without diminishing the immediate effect of BMI; thus, future research could focus on evaluating a possible causal effect of weight changes during the chronic phase of stroke by including data with more accurate BMI and with less prolonged time intervals than our data. Futures research could also explore the influence of pre-stroke BMI and post-stroke functional limitations to provide more insight into the effect of BMI in this population.

CONCLUSION

Our analysis of stroke patients suggests that post-stroke BMI is associated in the short term with limitations in ADL, IADL and mobility. This association differs between men and women and is also influenced by age. These findings suggest that health services that follow up post-stroke patients after the sub-acute stage should consider a periodic assessment of BMI and limitations to obtain an overview of the patient's functional status.

ACKNOWLEDGEMENTS

We are grateful to the respondents from each of the studies for their considerable time and to all members of the HRS, SHARE and ELSA study teams.

AUTHOR CONTRIBUTIONS

Conceptualization: AGS, AS; Methodology: AGS, AD, SS; Validation: AS, SS; Formal analysis: AGS, AD; Data Curation: AGS, AS; Writing original draft preparation: AGS, AS, SS; Writing –review and editing: AD, AF, BL, MY; Visualization: AGS, SS, AD; Supervision: AS.

PATIENT INVOLVEMENT

The SHARE study is subject to continuous ethics review. During Waves 1 to 4, SHARE was reviewed and approved by the Ethics Committee of the University of Mannheim. Wave 4 of SHARE and the continuation of the project were reviewed and approved by the Ethics Council of the Max Planck Society (see www.share-project.org). Ethical consent for the English Longitudinal Study of Ageing (ELSA) is sought for every wave of data collection from the NHS Health Research Authority National Research Ethics Committee. Ethical consent was most recently obtained for ELSA Wave 9 (17/SC/0588). For the HRS data, the Institutional Review Board Information is available at https://hrs.isr.umich.edu/sites/default/files/biblio/HRS_IRB_Information%28web%29_08_2018.pdf.

FINANCIAL DISCLOSURE STATEMENT

The HRS is sponsored by the National Institute on Aging (Grant No. NIA U01AG009740) and is conducted by the University of Michigan. The SHARE data collection has been primarily funded by the European Commission through the FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), and FP7 (SHARE-PREP: N 211909, SHARE-LEAP: 227822, SHARE M4: N 261982). Additional funding from the German Ministry of Education and Research, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064), and from various national funding sources is gratefully acknowledged (see www.share-project.org). The ELSA data were made available through the UK Data Archive. ELSA was developed by a team of researchers based at the NatCen Social

Research, University College London, and the Institute for Fiscal Studies. The data were collected by NatCen Social Research. The funding is provided by the National Institute of Aging in the United States and a consortium of UK government departments coordinated by the Office for National Statistics. The developers and funders of ELSA and the Archive do not bear any responsibility for the analyses or interpretations presented here.

COMPETING INTEREST

The authors have declared that no competing interests exist.

DATA AVAILABILITY STATEMENT

All three data sets (HRS, SHARE, and ELSA) are available to all scientific users free of charge via their respective websites: https://hrsdata.isr.umich.edu/data-products/public-survey-data?_ga=2.52723631.649535907.1611333525-938078649.1601566229, <http://www.share-project.org/data-access/share-conditions-of-use.html> and <https://www.elsa-project.ac.uk/accessing-elsa-data>.

TRANSPARENCY DECLARATION

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned have been explained. The lead author in this statement is the study guarantor.

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Figure 1. Flowchart of the study sample

Controls matched on sex, wave, survey, and age within a 2-year range.

Figure 2. Mean ADL limitation score as a function of age and BMI stratified by sex in the chronic phase of stroke survivors and controls.

Estimated from a linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviours and the number of comorbidities. Age and BMI in square form. ADL limitation score range from 0=no limitation to 7=maximum limitation. Mean and confidence intervals are available in Table S1.

Figure 3. Mean IADL limitation score as a function of age and BMI stratified by sex in the chronic phase of stroke survivors and controls.

Estimated from a linear mixed model adjusted for socioeconomic variables, age to stroke, health behaviours and the number of comorbidities. Age and BMI in square form. IADL limitation score range from 0=no limitation to 6=maximum limitation. Mean and confidence intervals are available in Table S2.

Figure 4. Mean Mobility limitation score as a function of age and BMI stratified by sex in the chronic phase of stroke survivors and controls.

Estimated from a linear mixed model adjusted for socioeconomic variables, age to stroke, health behaviours and the number of comorbidities. Age and BMI in square form. Mobility limitation score range from 0=no limitation to 6=maximum limitation. Mean and confidence intervals are available in Table S3.

Table 1. Characteristics of the study sample at first interview of stroke report according to Body Mass Index categories

Characteristics	Stroke Population							p	Non-Stroke Population							p	Values are numbers (percentages) otherwise stated. Percentage is reported in column. *MVPA: moderate to vigorous physical activity
	Underweight (n=153)	Normal (n=1,782)	Overweight (n=2,095)	Obesity Class I (n=963)	Obesity Class II (n=317)	Obesity Class III (n=158)	Underweight (n=448)		Normal (n=6,889)	Overweight (n=8,612)	Obesity Class I (n=3,902)	Obesity Class II (n=1,319)	Obesity Class III (n=702)				
Sex																	
Men	39 (25.5)	801 (45.0)	1,098 (52.4)	440 (45.7)	116 (36.6)	50 (31.7)	<0.001	112 (25)	2,996 (43.5)	4,476 (52)	1,834 (47)	529 (40.1)	229 (32.6)	<0.001			
Women	114 (74.5)	981 (55.1)	997 (47.6)	523 (54.3)	201 (63.4)	108 (68.4)		336 (75)	3,893 (56.5)	4,136 (48)	2,068 (53)	790 (59.9)	473 (67.4)				
Age (years)																	
Mean (SD)	75.2 (10.3)	74.3 (9.7)	72.6 (9.4)	70.9 (9.0)	68.5 (9.2)	65.5 (8.1)	<0.001	75.6 (10.3)	73.9 (9.9)	71.8 (9.2)	70.3 (9.0)	68.3 (8.8)	65.4 (8.0)	<0.001			
Education level																	
Low	55 (36)	578 (32.4)	683 (32.6)	333 (34.6)	116 (36.6)	54 (34.2)		144 (32.1)	1,811 (26.3)	2,517 (29.2)	1,233 (31.6)	389 (29.5)	194 (27.6)				
Middle	69 (45.1)	839 (47.1)	1,010 (48.2)	474 (49.2)	158 (49.8)	78 (49.4)	0.126	205 (45.8)	3,290 (47.8)	4,192 (48.7)	1,939 (49.7)	711 (53.9)	408 (58.1)	<0.001			
High	29 (19)	365 (20.5)	402 (19.2)	156 (16.2)	43 (13.6)	26 (16.5)		99 (22.1)	1,788 (26)	1,903 (22.1)	730 (18.7)	219 (16.6)	100 (14.3)				
Marital status																	
Single/divorced/widowed	87 (56.9)	820 (46)	832 (39.7)	413 (42.9)	142 (44.8)	85 (53.8)	<0.001	243 (54.2)	3,053 (44.3)	3,324 (38.6)	1,575 (40.4)	570 (43.2)	353 (50.3)	<0.001			
Married/Cohabiting	66 (43.1)	962 (54)	1,263 (60.3)	550 (57.1)	175 (55.2)	73 (46.2)		205 (45.8)	3,836 (55.7)	5,288 (61.4)	2,327 (59.6)	749 (56.8)	349 (49.7)				
Smoking status																	
Non smoking	114 (74.5)	1,289 (72.3)	1,530 (73)	748 (77.7)	253 (79.8)	131 (82.9)	<0.001	307 (68.5)	4,857 (70.5)	6,098 (70.8)	2,932 (75.1)	1,056 (80.1)	615 (87.6)	<0.001			
Current smoking	39 (25.5)	493 (27.7)	565 (27)	215 (22.3)	64 (20.2)	27 (17.1)		141 (31.5)	2,032 (29.5)	2,514 (29.2)	970 (24.9)	263 (19.9)	87 (12.4)				
Alcohol consumption																	
Non drinkers	127 (83)	1,304 (73.2)	1,503 (71.7)	730 (75.8)	254 (80.1)	131 (82.9)	<0.001	331 (73.9)	4,356 (63.2)	5,234 (60.8)	2,619 (67.1)	928 (70.4)	574 (81.8)	<0.001			
Moderate drinkers	17 (11.1)	335 (18.8)	418 (20)	183 (19)	51 (16.1)	25 (15.8)		78 (17.4)	1,786 (25.9)	2,404 (27.9)	933 (23.9)	303 (23)	110 (15.7)				
Heavy drinkers	9 (5.9)	143 (8)	174 (8.3)	50 (5.2)	12 (3.8)	2 (1.3)		39 (8.7)	747 (10.8)	974 (11.3)	350 (9)	88 (6.7)	18 (2.6)				
*MVPA																	
No	113 (73.9)	1,117 (62.7)	1,221 (58.3)	619 (64.3)	226 (71.3)	122 (77.2)	<0.001	314 (70.1)	3,322 (48.2)	3,984 (46.3)	2,142 (54.9)	852 (64.6)	546 (77.8)	<0.001			
Yes	40 (26.1)	665 (37.3)	874 (41.7)	344 (35.7)	91 (28.7)	36 (22.8)		134 (29.9)	3,567 (51.8)	4,628 (53.7)	1,760 (45.1)	467 (35.4)	156 (22.2)				
Number of comorbidities																	
0	18 (11.8)	221 (12.4)	219 (10.5)	55 (5.7)	14 (4.4)	3 (1.9)		60 (13.4)	1,453 (21.1)	1,439 (16.7)	390 (10)	68 (5.2)	17 (2.4)				
1	31 (20.3)	364 (20.4)	458 (21.9)	174 (18.1)	42 (13.3)	18 (11.4)	<0.001	101 (22.5)	1,740 (25.3)	2,133 (24.8)	751 (19.3)	163 (12.4)	60 (8.6)	<0.001			
2	34 (22.2)	458 (25.7)	518 (24.7)	228 (23.7)	70 (22.1)	20 (12.7)		107 (23.9)	1,569 (22.8)	1,941 (22.5)	916 (23.5)	278 (21.1)	106 (15.1)				
3 or more	70 (45.8)	739 (41.5)	900 (43)	506 (52.5)	191 (60.3)	117 (74.1)		180 (40.2)	2,127 (30.9)	3,099 (36)	1,845 (47.3)	810 (61.4)	519 (73.9)				
ADL limitation Score (0-7)																	
Mean (SD)	2.5 (2.6)	1.7 (2.3)	1.3 (1.9)	1.6 (2.1)	1.6 (1.9)	2.0 (2.0)	<0.001	1.9 (2.3)	0.8 (1.5)	0.7 (1.4)	0.8 (1.4)	1.2 (1.6)	1.6 (1.8)	<0.001			
IADL limitation Score (0-6)																	
Mean (SD)	2.2 (2.1)	1.6 (2.0)	1.1 (1.7)	1.2 (1.8)	1.2 (1.8)	1.2 (1.7)	<0.001	1.5 (2.0)	0.7 (1.4)	0.5 (1.1)	0.5 (1.1)	0.6 (1.2)	0.7 (1.1)	<0.001			
Mobility limitation Score (0-6)																	
Mean (SD)	3.5 (2.0)	3.0 (2.0)	2.8 (1.9)	3.1 (1.9)	3.6 (1.8)	4.1 (1.5)	<0.001	3.0 (2.1)	2.0 (1.9)	2.1 (1.9)	2.6 (1.9)	3.4 (1.8)	4.0 (1.7)	<0.001			

Table S1. Predictions of ADL limitations mean score by age, sex and BMI

Age	BMI	Men Stroke			Men Non-Stroke			Women Stroke			Women Non-Stroke		
		Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff
50	15	3.63 (2.75 to 4.50)	2.171	<0.001	1.65 (0.92 to 2.38)	0.903	0.010	2.39 (1.58 to 3.19)	0.996	0.014	1.52 (0.85 to 2.18)	0.531	0.076
50	17	3.16 (2.41 to 3.91)	1.702	<0.001	1.40 (0.79 to 2.02)	0.653	0.018	2.25 (1.52 to 2.98)	0.861	0.014	1.42 (0.82 to 2.02)	0.433	0.083
50	19	2.75 (2.1 to 3.40)	1.289	<0.001	1.19 (0.67 to 1.72)	0.444	0.035	2.13 (1.46 to 2.79)	0.736	0.016	1.33 (0.78 to 1.89)	0.345	0.093
50	21	2.39 (1.81 to 2.97)	0.934	<0.001	1.02 (0.56 to 1.49)	0.274	0.074	2.01 (1.39 to 2.63)	0.620	0.019	1.26 (0.73 to 1.78)	0.268	0.111
50	23	2.09 (1.56 to 2.62)	0.636	0.001	0.90 (0.47 to 1.32)	0.146	0.116	1.90 (1.31 to 2.50)	0.513	0.025	1.19 (0.68 to 1.69)	0.200	0.139
50	25	1.85 (1.35 to 2.36)	0.395	0.007	0.81 (0.40 to 1.21)	0.057	0.377	1.81 (1.23 to 2.38)	0.416	0.036	1.13 (0.63 to 1.62)	0.142	0.185
50	27	1.67 (1.17 to 2.16)	0.211	0.051	0.76 (0.36 to 1.16)	0.008	0.781	1.72 (1.15 to 2.29)	0.328	0.054	1.08 (0.59 to 1.57)	0.094	0.257
50	29	1.54 (1.05 to 2.03)	0.083	0.244	0.75 (0.35 to 1.15)	Ref.	Ref.	1.64 (1.08 to 2.21)	0.250	0.083	1.04 (0.55 to 1.54)	0.055	0.365
50	31	1.47 (0.97 to 1.97)	0.013	0.717	0.78 (0.37 to 1.19)	0.032	0.236	1.57 (1.01 to 2.14)	0.181	0.128	1.01 (0.52 to 1.51)	0.027	0.512
50	33	1.46 (0.94 to 1.97)	Ref.	Ref.	0.85 (0.43 to 1.28)	0.104	0.052	1.51 (0.94 to 2.09)	0.122	0.191	1.00 (0.49 to 1.50)	0.009	0.687
50	35	1.50 (0.97 to 2.03)	0.044	0.268	0.97 (0.53 to 1.40)	0.217	0.009	1.46 (0.88 to 2.04)	0.072	0.272	0.99 (0.48 to 1.50)	0.000	Ref.
50	37	1.60 (1.04 to 2.16)	0.145	0.086	1.12 (0.66 to 1.58)	0.369	0.002	1.42 (0.83 to 2.02)	0.031	0.367	0.99 (0.47 to 1.51)	0.001	0.956
50	39	1.76 (1.15 to 2.36)	0.303	0.025	1.31 (0.82 to 1.81)	0.562	<0.001	1.39 (0.78 to 2.00)	Ref.	Ref.	1.00 (0.47 to 1.53)	0.013	0.806
55	15	2.96 (2.30 to 3.62)	1.867	<0.001	1.28 (0.74 to 1.82)	0.681	0.002	1.80 (1.14 to 2.46)	0.694	0.020	1.09 (0.53 to 1.65)	0.331	0.088
55	17	2.58 (2.00 to 3.16)	1.486	<0.001	1.10 (0.62 to 1.58)	0.504	0.005	1.70 (1.10 to 2.31)	0.595	0.022	1.02 (0.49 to 1.55)	0.262	0.102
55	19	2.24 (1.73 to 2.76)	1.149	<0.001	0.95 (0.52 to 1.39)	0.354	0.009	1.61 (1.04 to 2.18)	0.503	0.025	0.96 (0.46 to 1.46)	0.201	0.122
55	21	1.95 (1.48 to 2.42)	0.855	<0.001	0.83 (0.42 to 1.23)	0.230	0.021	1.53 (0.99 to 2.07)	0.419	0.030	0.91 (0.42 to 1.39)	0.149	0.150
55	23	1.70 (1.26 to 2.14)	0.604	<0.001	0.73 (0.35 to 1.12)	0.133	0.052	1.45 (0.93 to 1.97)	0.342	0.039	0.86 (0.38 to 1.34)	0.104	0.194
55	25	1.49 (1.07 to 1.91)	0.397	<0.001	0.66 (0.28 to 1.04)	0.062	0.136	1.38 (0.87 to 1.89)	0.273	0.055	0.82 (0.35 to 1.30)	0.067	0.260
55	27	1.33 (0.91 to 1.74)	0.233	0.002	0.62 (0.24 to 0.99)	0.018	0.353	1.32 (0.82 to 1.83)	0.212	0.081	0.80 (0.32 to 1.27)	0.039	0.360
55	29	1.20 (0.79 to 1.62)	0.112	0.026	0.60 (0.22 to 0.97)	Ref.	Ref.	1.27 (0.76 to 1.77)	0.158	0.122	0.77 (0.30 to 1.25)	0.018	0.507
55	31	1.13 (0.71 to 1.55)	0.034	0.175	0.61 (0.23 to 0.98)	0.009	0.613	1.22 (0.71 to 1.73)	0.111	0.182	0.76 (0.29 to 1.24)	0.005	0.705
55	33	1.09 (0.66 to 1.52)	Ref.	Ref.	0.64 (0.26 to 1.02)	0.044	0.190	1.18 (0.67 to 1.69)	0.072	0.264	0.76 (0.28 to 1.23)	0.000	Ref.
55	35	1.10 (0.66 to 1.54)	0.009	0.742	0.70 (0.32 to 1.09)	0.105	0.037	1.15 (0.64 to 1.67)	0.041	0.367	0.76 (0.28 to 1.24)	0.003	0.817
55	37	1.15 (0.70 to 1.61)	0.061	0.283	0.79 (0.40 to 1.19)	0.193	0.006	1.13 (0.60 to 1.65)	0.017	0.484	0.77 (0.29 to 1.25)	0.014	0.604
55	39	1.25 (0.77 to 1.73)	0.156	0.084	0.91 (0.50 to 1.32)	0.308	0.001	1.11 (0.58 to 1.64)	Ref.	Ref.	0.79 (0.3 to 1.28)	0.033	0.440
60	15	2.49 (1.98 to 3.01)	1.635	<0.001	1.05 (0.62 to 1.48)	0.550	<0.001	1.43 (0.87 to 2.00)	0.454	0.032	0.82 (0.32 to 1.32)	0.214	0.051
60	17	2.18 (1.71 to 2.64)	1.317	<0.001	0.92 (0.52 to 1.33)	0.420	<0.001	1.36 (0.82 to 1.89)	0.377	0.038	0.77 (0.29 to 1.25)	0.161	0.068
60	19	1.89 (1.46 to 2.32)	1.033	<0.001	0.81 (0.42 to 1.19)	0.307	0.001	1.29 (0.78 to 1.80)	0.306	0.046	0.72 (0.25 to 1.2)	0.115	0.094

60	21	1.64 (1.24 to 2.05)	0.783	<0.001	0.71 (0.34 to 1.08)	0.212	0.002	1.22 (0.73 to 1.72)	0.244	0.060	0.69 (0.22 to 1.15)	0.077	0.134
60	23	1.43 (1.04 to 1.81)	0.568	<0.001	0.64 (0.27 to 1.00)	0.134	0.009	1.17 (0.69 to 1.65)	0.188	0.081	0.66 (0.19 to 1.12)	0.046	0.197
60	25	1.25 (0.87 to 1.62)	0.388	<0.001	0.58 (0.22 to 0.94)	0.074	0.035	1.12 (0.64 to 1.60)	0.139	0.117	0.63 (0.17 to 1.09)	0.023	0.298
60	27	1.1 (0.73 to 1.48)	0.241	0.001	0.53 (0.17 to 0.89)	0.032	0.141	1.08 (0.61 to 1.55)	0.098	0.174	0.62 (0.16 to 1.08)	0.008	0.455
60	29	0.99 (0.61 to 1.36)	0.130	0.013	0.51 (0.15 to 0.87)	0.007	0.482	1.04 (0.57 to 1.52)	0.064	0.262	0.61 (0.15 to 1.07)	0.000	Ref.
60	31	0.91 (0.53 to 1.29)	0.052	0.144	0.50 (0.14 to 0.86)	Ref.	Ref.	1.02 (0.54 to 1.49)	0.037	0.387	0.61 (0.15 to 1.07)	0.000	0.997
60	33	0.87 (0.49 to 1.25)	0.009	0.633	0.51 (0.15 to 0.87)	0.010	0.284	1.00 (0.52 to 1.47)	0.018	0.547	0.62 (0.16 to 1.08)	0.008	0.642
60	35	0.86 (0.47 to 1.25)	Ref.	Ref.	0.54 (0.18 to 0.90)	0.038	0.053	0.99 (0.51 to 1.46)	0.005	0.732	0.63 (0.17 to 1.09)	0.023	0.333
60	37	0.88 (0.49 to 1.28)	0.026	0.215	0.59 (0.22 to 0.95)	0.084	0.007	0.98 (0.50 to 1.46)	Ref.	Ref.	0.66 (0.19 to 1.12)	0.046	0.135
60	39	0.94 (0.53 to 1.36)	0.085	0.052	0.65 (0.28 to 1.02)	0.147	0.001	0.98 (0.49 to 1.47)	0.002	0.902	0.69 (0.22 to 1.15)	0.077	0.045
65	15	2.23 (1.79 to 2.68)	1.458	<0.001	0.97 (0.58 to 1.35)	0.505	<0.001	1.28 (0.76 to 1.80)	0.319	0.034	0.73 (0.25 to 1.20)	0.181	0.007
65	17	1.95 (1.54 to 2.36)	1.176	<0.001	0.86 (0.48 to 1.23)	0.395	<0.001	1.21 (0.72 to 1.71)	0.249	0.045	0.67 (0.21 to 1.14)	0.129	0.015
65	19	1.7 (1.31 to 2.08)	0.924	<0.001	0.76 (0.40 to 1.12)	0.298	<0.001	1.15 (0.67 to 1.63)	0.188	0.063	0.63 (0.17 to 1.09)	0.085	0.032
65	21	1.47 (1.1 to 1.85)	0.702	<0.001	0.68 (0.32 to 1.03)	0.215	<0.001	1.10 (0.63 to 1.57)	0.135	0.093	0.59 (0.14 to 1.05)	0.050	0.069
65	23	1.28 (0.92 to 1.65)	0.511	<0.001	0.61 (0.25 to 0.96)	0.145	<0.001	1.05 (0.59 to 1.52)	0.091	0.145	0.57 (0.11 to 1.02)	0.024	0.154
65	25	1.12 (0.76 to 1.48)	0.350	<0.001	0.55 (0.20 to 0.90)	0.089	0.002	1.02 (0.56 to 1.48)	0.056	0.234	0.55 (0.1 to 1.01)	0.008	0.333
65	27	0.99 (0.63 to 1.35)	0.219	<0.001	0.51 (0.16 to 0.86)	0.046	0.022	0.99 (0.53 to 1.45)	0.029	0.385	0.54 (0.09 to 1.00)	Ref.	Ref.
65	29	0.89 (0.53 to 1.25)	0.119	0.002	0.48 (0.13 to 0.83)	0.017	0.191	0.97 (0.51 to 1.43)	0.011	0.615	0.55 (0.09 to 1.00)	0.001	0.840
65	31	0.82 (0.46 to 1.18)	0.049	0.063	0.46 (0.11 to 0.82)	0.002	0.781	0.96 (0.50 to 1.42)	0.001	0.919	0.56 (0.10 to 1.01)	0.012	0.353
65	33	0.78 (0.42 to 1.14)	0.009	0.507	0.46 (0.11 to 0.82)	Ref.	Ref.	0.96 (0.50 to 1.42)	Ref.	Ref.	0.58 (0.12 to 1.03)	0.031	0.080
65	35	0.77 (0.41 to 1.14)	Ref.	Ref.	0.47 (0.12 to 0.83)	0.012	0.116	0.97 (0.51 to 1.43)	0.008	0.480	0.60 (0.15 to 1.06)	0.060	0.008
65	37	0.79 (0.42 to 1.17)	0.021	0.191	0.50 (0.14 to 0.86)	0.037	0.022	0.99 (0.52 to 1.45)	0.024	0.286	0.64 (0.19 to 1.10)	0.097	<0.001
65	39	0.85 (0.46 to 1.23)	0.073	0.038	0.54 (0.18 to 0.9)	0.076	0.004	1.01 (0.54 to 1.48)	0.048	0.168	0.69 (0.23 to 1.14)	0.144	<0.001
70	15	2.17 (1.75 to 2.59)	1.335	<0.001	1.03 (0.65 to 1.41)	0.534	<0.001	1.34 (0.85 to 1.84)	0.290	0.012	0.79 (0.33 to 1.26)	0.216	<0.001
70	17	1.90 (1.5 to 2.29)	1.062	<0.001	0.91 (0.55 to 1.28)	0.417	<0.001	1.27 (0.79 to 1.74)	0.214	0.019	0.73 (0.27 to 1.19)	0.150	0.001
70	19	1.66 (1.28 to 2.03)	0.820	<0.001	0.81 (0.45 to 1.17)	0.315	<0.001	1.20 (0.73 to 1.67)	0.149	0.033	0.67 (0.22 to 1.13)	0.096	0.005
70	21	1.44 (1.08 to 1.81)	0.609	<0.001	0.72 (0.37 to 1.07)	0.227	<0.001	1.15 (0.69 to 1.61)	0.096	0.061	0.63 (0.18 to 1.09)	0.054	0.023
70	23	1.26 (0.91 to 1.62)	0.430	<0.001	0.65 (0.30 to 1.00)	0.153	<0.001	1.11 (0.65 to 1.56)	0.055	0.122	0.60 (0.15 to 1.05)	0.024	0.100
70	25	1.12 (0.76 to 1.47)	0.281	<0.001	0.59 (0.24 to 0.94)	0.093	<0.001	1.08 (0.62 to 1.53)	0.025	0.250	0.58 (0.13 to 1.04)	0.006	0.376
70	27	1.00 (0.65 to 1.35)	0.164	<0.001	0.54 (0.20 to 0.89)	0.048	0.007	1.06 (0.60 to 1.51)	0.007	0.506	0.58 (0.13 to 1.03)	Ref.	Ref.
70	29	0.91 (0.56 to 1.27)	0.078	<0.001	0.51 (0.16 to 0.86)	0.018	0.138	1.05 (0.60 to 1.51)	Ref.	Ref.	0.58 (0.13 to 1.04)	0.006	0.276
70	31	0.86 (0.50 to 1.21)	0.024	0.027	0.50 (0.15 to 0.85)	0.002	0.784	1.06 (0.60 to 1.51)	0.005	0.570	0.60 (0.15 to 1.05)	0.024	0.022
70	33	0.84 (0.48 to 1.19)	Ref.	Ref.	0.50 (0.15 to 0.85)	Ref.	Ref.	1.07 (0.62 to 1.53)	0.022	0.205	0.63 (0.18 to 1.08)	0.055	<0.001

70	35	0.84 (0.48 to 1.2)	0.008	0.542	0.51 (0.16 to 0.86)	0.013	0.089	1.10 (0.64 to 1.56)	0.050	0.051	0.68 (0.22 to 1.13)	0.097	<0.001
70	37	0.88 (0.52 to 1.25)	0.046	0.091	0.54 (0.18 to 0.89)	0.040	0.016	1.14 (0.68 to 1.60)	0.089	0.011	0.73 (0.28 to 1.18)	0.151	<0.001
70	39	0.95 (0.58 to 1.32)	0.116	0.01	0.58 (0.22 to 0.93)	0.081	0.003	1.19 (0.73 to 1.65)	0.141	0.002	0.80 (0.34 to 1.25)	0.218	<0.001
75	15	2.31 (1.89 to 2.73)	1.290	<0.001	1.24 (0.86 to 1.62)	0.638	<0.001	1.62 (1.13 to 2.11)	0.337	0.001	1.03 (0.57 to 1.49)	0.310	<0.001
75	17	2.02 (1.63 to 2.41)	1.000	<0.001	1.09 (0.72 to 1.45)	0.488	<0.001	1.52 (1.05 to 1.99)	0.240	0.002	0.94 (0.48 to 1.39)	0.217	<0.001
75	19	1.77 (1.40 to 2.14)	0.746	<0.001	0.96 (0.60 to 1.31)	0.358	<0.001	1.44 (0.98 to 1.90)	0.159	0.005	0.86 (0.41 to 1.31)	0.140	<0.001
75	21	1.55 (1.19 to 1.91)	0.529	<0.001	0.85 (0.49 to 1.20)	0.248	<0.001	1.38 (0.92 to 1.83)	0.095	0.015	0.80 (0.35 to 1.25)	0.080	0.001
75	23	1.37 (1.02 to 1.73)	0.350	<0.001	0.76 (0.41 to 1.11)	0.158	<0.001	1.33 (0.87 to 1.78)	0.047	0.049	0.76 (0.31 to 1.21)	0.037	0.012
75	25	1.23 (0.88 to 1.58)	0.207	<0.001	0.69 (0.34 to 1.04)	0.088	<0.001	1.30 (0.84 to 1.75)	0.015	0.159	0.73 (0.28 to 1.18)	0.010	0.135
75	27	1.12 (0.77 to 1.48)	0.101	<0.001	0.64 (0.29 to 0.99)	0.039	0.002	1.28 (0.83 to 1.73)	Ref.	Ref.	0.72 (0.27 to 1.17)	Ref.	Ref.
75	29	1.05 (0.70 to 1.41)	0.032	<0.001	0.61 (0.26 to 0.96)	0.009	0.13	1.28 (0.83 to 1.74)	0.001	0.932	0.73 (0.28 to 1.18)	0.007	0.230
75	31	1.02 (0.67 to 1.38)	Ref.	Ref.	0.60 (0.25 to 0.95)	Ref.	Ref.	1.30 (0.84 to 1.75)	0.018	0.313	0.75 (0.30 to 1.20)	0.030	0.004
75	33	1.03 (0.67 to 1.38)	0.005	0.674	0.61 (0.26 to 0.96)	0.011	0.105	1.33 (0.88 to 1.79)	0.051	0.046	0.79 (0.34 to 1.24)	0.070	<0.001
75	35	1.07 (0.71 to 1.43)	0.047	0.062	0.64 (0.29 to 0.99)	0.042	0.004	1.38 (0.92 to 1.84)	0.101	0.003	0.85 (0.40 to 1.30)	0.127	<0.001
75	37	1.15 (0.78 to 1.51)	0.125	0.002	0.69 (0.34 to 1.04)	0.093	<0.001	1.45 (0.99 to 1.91)	0.167	<0.001	0.92 (0.47 to 1.37)	0.201	<0.001
75	39	1.26 (0.89 to 1.64)	0.241	<0.001	0.76 (0.41 to 1.12)	0.164	<0.001	1.53 (1.07 to 1.99)	0.249	<0.001	1.01 (0.56 to 1.46)	0.291	<0.001
80	15	2.66 (2.23 to 3.08)	1.344	<0.001	1.59 (1.21 to 1.97)	0.825	<0.001	2.11 (1.62 to 2.60)	0.450	<0.001	1.43 (0.97 to 1.90)	0.464	<0.001
80	17	2.32 (1.93 to 2.72)	1.010	<0.001	1.38 (1.01 to 1.75)	0.615	<0.001	1.98 (1.50 to 2.45)	0.318	<0.001	1.3 (0.84 to 1.75)	0.329	<0.001
80	19	2.04 (1.66 to 2.41)	0.723	<0.001	1.20 (0.84 to 1.56)	0.435	<0.001	1.87 (1.40 to 2.33)	0.210	<0.001	1.18 (0.73 to 1.64)	0.217	<0.001
80	21	1.80 (1.43 to 2.16)	0.484	<0.001	1.05 (0.70 to 1.41)	0.287	<0.001	1.78 (1.32 to 2.24)	0.123	0.002	1.10 (0.64 to 1.55)	0.129	<0.001
80	23	1.60 (1.25 to 1.96)	0.292	<0.001	0.93 (0.58 to 1.29)	0.169	<0.001	1.72 (1.26 to 2.17)	0.060	0.017	1.03 (0.58 to 1.48)	0.063	<0.001
80	25	1.46 (1.11 to 1.82)	0.148	<0.001	0.85 (0.50 to 1.20)	0.082	<0.001	1.68 (1.22 to 2.13)	0.019	0.113	0.99 (0.54 to 1.44)	0.020	0.004
80	27	1.36 (1.01 to 1.72)	0.051	0.061	0.79 (0.44 to 1.14)	0.026	0.001	1.66 (1.20 to 2.11)	Ref.	Ref.	0.97 (0.52 to 1.42)	Ref.	Ref.
80	29	1.31 (0.96 to 1.67)	0.002	0.896	0.77 (0.42 to 1.12)	Ref.	Ref.	1.66 (1.21 to 2.12)	0.004	0.706	0.97 (0.52 to 1.42)	0.003	0.596
80	31	1.31 (0.95 to 1.67)	Ref.	Ref.	0.77 (0.42 to 1.12)	0.005	0.508	1.69 (1.23 to 2.14)	0.031	0.141	1.00 (0.55 to 1.45)	0.029	0.011
80	33	1.36 (1.00 to 1.72)	0.046	0.003	0.81 (0.45 to 1.16)	0.041	0.013	1.74 (1.28 to 2.20)	0.080	0.011	1.05 (0.59 to 1.50)	0.079	<0.001
80	35	1.45 (1.08 to 1.82)	0.139	<0.001	0.87 (0.52 to 1.23)	0.107	<0.001	1.81 (1.35 to 2.27)	0.151	<0.001	1.12 (0.67 to 1.57)	0.151	<0.001
80	37	1.59 (1.21 to 1.97)	0.280	<0.001	0.97 (0.61 to 1.33)	0.205	<0.001	1.90 (1.44 to 2.37)	0.246	<0.001	1.21 (0.76 to 1.67)	0.246	<0.001
80	39	1.78 (1.38 to 2.18)	0.468	<0.001	1.10 (0.73 to 1.46)	0.332	<0.001	2.02 (1.55 to 2.49)	0.363	<0.001	1.33 (0.88 to 1.79)	0.364	<0.001
85	15	3.20 (2.75 to 3.66)	1.511	<0.001	2.09 (1.68 to 2.49)	1.104	<0.001	2.81 (2.32 to 3.31)	0.623	<0.001	2.00 (1.53 to 2.47)	0.683	<0.001
85	17	2.80 (2.38 to 3.22)	1.106	<0.001	1.79 (1.41 to 2.17)	0.808	<0.001	2.63 (2.15 to 3.11)	0.443	<0.001	1.81 (1.35 to 2.27)	0.492	<0.001
85	19	2.46 (2.07 to 2.85)	0.764	<0.001	1.54 (1.18 to 1.91)	0.558	<0.001	2.48 (2.01 to 2.95)	0.293	<0.001	1.65 (1.19 to 2.10)	0.333	<0.001
85	21	2.18 (1.80 to 2.55)	0.486	<0.001	1.34 (0.98 to 1.70)	0.354	<0.001	2.36 (1.90 to 2.83)	0.174	<0.001	1.52 (1.07 to 1.97)	0.204	<0.001

85	23	1.96 (1.60 to 2.33)	0.270	<0.001	1.18 (0.83 to 1.53)	0.196	<0.001	2.28 (1.82 to 2.74)	0.085	0.004	1.42 (0.97 to 1.88)	0.107	<0.001
85	25	1.81 (1.45 to 2.17)	0.117	0.002	1.07 (0.71 to 1.42)	0.085	<0.001	2.22 (1.76 to 2.68)	0.027	0.051	1.36 (0.90 to 1.81)	0.040	0.008
85	27	1.72 (1.36 to 2.08)	0.027	0.147	1.00 (0.65 to 1.36)	0.019	0.067	2.19 (1.73 to 2.65)	Ref.	Ref.	1.32 (0.87 to 1.77)	0.005	0.532
85	29	1.69 (1.33 to 2.06)	Ref.	Ref.	0.98 (0.63 to 1.34)	Ref.	Ref.	2.19 (1.73 to 2.65)	0.003	0.823	1.32 (0.86 to 1.77)	Ref.	Ref.
85	31	1.73 (1.36 to 2.10)	0.036	0.071	1.01 (0.65 to 1.37)	0.027	0.026	2.23 (1.76 to 2.69)	0.037	0.181	1.34 (0.89 to 1.8)	0.026	0.001
85	33	1.83 (1.45 to 2.21)	0.135	0.001	1.08 (0.72 to 1.44)	0.100	<0.001	2.29 (1.82 to 2.76)	0.101	0.017	1.40 (0.94 to 1.85)	0.084	<0.001
85	35	1.99 (1.59 to 2.39)	0.297	<0.001	1.20 (0.84 to 1.57)	0.219	<0.001	2.39 (1.91 to 2.86)	0.195	0.001	1.49 (1.03 to 1.94)	0.172	<0.001
85	37	2.22 (1.79 to 2.64)	0.522	<0.001	1.37 (0.99 to 1.75)	0.385	<0.001	2.51 (2.03 to 2.99)	0.320	<0.001	1.61 (1.15 to 2.07)	0.291	<0.001
85	39	2.50 (2.04 to 2.96)	0.809	<0.001	1.58 (1.18 to 1.98)	0.596	<0.001	2.67 (2.17 to 3.16)	0.476	<0.001	1.76 (1.29 to 2.22)	0.441	<0.001
90	15	3.95 (3.42 to 4.49)	1.762	<0.001	2.73 (2.25 to 3.21)	1.467	<0.001	3.73 (3.21 to 4.25)	0.858	<0.001	2.73 (2.25 to 3.22)	0.968	<0.001
90	17	3.45 (2.98 to 3.93)	1.261	<0.001	2.32 (1.90 to 2.75)	1.058	<0.001	3.49 (2.99 to 3.99)	0.615	<0.001	2.47 (2.00 to 2.94)	0.708	<0.001
90	19	3.03 (2.61 to 3.46)	0.843	<0.001	1.98 (1.59 to 2.37)	0.715	<0.001	3.29 (2.80 to 3.77)	0.412	<0.001	2.25 (1.79 to 2.72)	0.489	<0.001
90	21	2.70 (2.30 to 3.10)	0.507	<0.001	1.70 (1.33 to 2.08)	0.439	<0.001	3.13 (2.65 to 3.60)	0.249	0.001	2.07 (1.61 to 2.53)	0.310	<0.001
90	23	2.45 (2.06 to 2.84)	0.256	0.001	1.49 (1.13 to 1.86)	0.230	<0.001	3.00 (2.53 to 3.47)	0.127	0.021	1.94 (1.48 to 2.39)	0.172	<0.001
90	25	2.28 (1.89 to 2.66)	0.087	0.09	1.35 (0.99 to 1.71)	0.087	0.009	2.92 (2.45 to 3.39)	0.044	0.221	1.84 (1.38 to 2.3)	0.074	0.001
90	27	2.19 (1.81 to 2.58)	0.002	0.939	1.27 (0.91 to 1.64)	0.010	0.549	2.88 (2.41 to 3.35)	0.002	0.906	1.78 (1.32 to 2.24)	0.017	0.130
90	29	2.19 (1.80 to 2.59)	Ref.	Ref.	1.26 (0.90 to 1.63)	Ref.	Ref.	2.88 (2.40 to 3.35)	Ref.	Ref.	1.76 (1.30 to 2.22)	Ref.	Ref.
90	31	2.27 (1.86 to 2.68)	0.081	0.004	1.32 (0.95 to 1.69)	0.056	0.004	2.91 (2.43 to 3.40)	0.038	0.049	1.79 (1.33 to 2.25)	0.024	0.052
90	33	2.44 (2.01 to 2.87)	0.246	<0.001	1.44 (1.06 to 1.83)	0.179	<0.001	2.99 (2.50 to 3.48)	0.116	0.004	1.85 (1.39 to 2.32)	0.088	0.001
90	35	2.69 (2.22 to 3.15)	0.494	<0.001	1.63 (1.23 to 2.03)	0.369	<0.001	3.11 (2.61 to 3.61)	0.234	<0.001	1.96 (1.49 to 2.43)	0.194	<0.001
90	37	3.02 (2.51 to 3.53)	0.825	<0.001	1.89 (1.46 to 2.32)	0.625	<0.001	3.27 (2.75 to 3.79)	0.393	<0.001	2.10 (1.62 to 2.58)	0.339	<0.001
90	39	3.43 (2.86 to 4.00)	1.239	<0.001	2.21 (1.73 to 2.69)	0.947	<0.001	3.47 (2.92 to 4.01)	0.591	<0.001	2.29 (1.80 to 2.78)	0.525	<0.001

Estimated from linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviors and number of comorbidities. Age and BMI in square form. ADL limitation score range from 0=no limitation to 7=maximum limitation. Diff: difference between the prediction of the reference score (lowest limitation score of the age group) and the limitation score corresponding level. P diff: p difference between the prediction of the reference score and the limitation score corresponding level.

Table S2. Prediction of IADL limitations mean score by age, sex and BMI

Age	BMI	Men Stroke			Men Non-Stroke			Women Stroke			Women Non-Stroke		
		Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff
50	15	3.11 (2.42 to 3.8)	2.257	<0.001	1.34 (0.78 to 1.89)	0.616	0.046	1.87 (1.28 to 2.46)	0.822	0.014	1.23 (0.78 to 1.68)	0.308	0.231
50	17	2.73 (2.15 to 3.3)	1.871	<0.001	1.19 (0.74 to 1.64)	0.467	0.059	1.78 (1.27 to 2.3)	0.737	0.011	1.20 (0.81 to 1.59)	0.277	0.206
50	19	2.38 (1.89 to 2.86)	1.521	<0.001	1.06 (0.7 to 1.42)	0.338	0.081	1.70 (1.25 to 2.15)	0.654	0.009	1.17 (0.83 to 1.51)	0.248	0.185
50	21	2.06 (1.65 to 2.48)	1.208	<0.001	0.95 (0.66 to 1.24)	0.23	0.119	1.62 (1.21 to 2.03)	0.575	0.008	1.14 (0.84 to 1.44)	0.219	0.171
50	23	1.79 (1.42 to 2.15)	0.93	<0.001	0.87 (0.62 to 1.11)	0.143	0.186	1.54 (1.17 to 1.92)	0.498	0.008	1.11 (0.84 to 1.39)	0.191	0.164
50	25	1.55 (1.21 to 1.88)	0.689	<0.001	0.80 (0.57 to 1.02)	0.076	0.308	1.47 (1.11 to 1.83)	0.425	0.009	1.09 (0.82 to 1.35)	0.164	0.166
50	27	1.34 (1.01 to 1.67)	0.484	0.001	0.75 (0.53 to 0.97)	0.03	0.518	1.40 (1.05 to 1.75)	0.355	0.011	1.06 (0.8 to 1.32)	0.138	0.179
50	29	1.17 (0.84 to 1.5)	0.315	0.013	0.73 (0.5 to 0.95)	0.005	0.828	1.33 (0.99 to 1.68)	0.288	0.016	1.04 (0.77 to 1.3)	0.113	0.201
50	31	1.04 (0.7 to 1.37)	0.182	0.068	0.72 (0.49 to 0.95)	Ref.	Ref.	1.27 (0.92 to 1.62)	0.224	0.023	1.01 (0.74 to 1.28)	0.089	0.233
50	33	0.94 (0.59 to 1.29)	0.085	0.228	0.74 (0.49 to 0.98)	0.016	0.499	1.21 (0.85 to 1.57)	0.164	0.034	0.99 (0.71 to 1.26)	0.065	0.272
50	35	0.88 (0.51 to 1.25)	0.024	0.518	0.77 (0.51 to 1.04)	0.052	0.289	1.15 (0.78 to 1.52)	0.106	0.050	0.97 (0.68 to 1.25)	0.043	0.316
50	37	0.86 (0.46 to 1.25)	Ref.	Ref.	0.83 (0.54 to 1.12)	0.109	0.168	1.1 (0.72 to 1.48)	0.051	0.072	0.94 (0.65 to 1.24)	0.021	0.362
50	39	0.87 (0.43 to 1.31)	0.012	0.789	0.91 (0.58 to 1.24)	0.186	0.104	1.05 (0.65 to 1.44)	Ref.	Ref.	0.92 (0.61 to 1.23)	Ref.	Ref.
55	15	2.54 (2.06 to 3.03)	1.996	<0.001	0.95 (0.58 to 1.33)	0.488	0.017	1.49 (1.05 to 1.93)	0.736	0.003	0.9 (0.56 to 1.24)	0.310	0.068
55	17	2.22 (1.82 to 2.63)	1.677	<0.001	0.85 (0.54 to 1.16)	0.385	0.020	1.41 (1.02 to 1.8)	0.652	0.002	0.86 (0.56 to 1.17)	0.275	0.058
55	19	1.93 (1.59 to 2.28)	1.386	<0.001	0.76 (0.5 to 1.02)	0.294	0.027	1.33 (0.98 to 1.68)	0.573	0.002	0.83 (0.56 to 1.1)	0.241	0.050
55	21	1.67 (1.37 to 1.97)	1.123	<0.001	0.68 (0.46 to 0.90)	0.216	0.039	1.25 (0.93 to 1.57)	0.498	0.002	0.8 (0.54 to 1.05)	0.209	0.055
55	23	1.43 (1.17 to 1.7)	0.887	<0.001	0.61 (0.42 to 0.81)	0.149	0.062	1.18 (0.88 to 1.48)	0.426	0.002	0.77 (0.53 to 1.01)	0.178	0.053
55	25	1.23 (0.98 to 1.47)	0.679	<0.001	0.56 (0.38 to 0.74)	0.095	0.110	1.11 (0.83 to 1.4)	0.359	0.002	0.74 (0.5 to 0.97)	0.150	0.055
55	27	1.05 (0.81 to 1.28)	0.499	<0.001	0.52 (0.34 to 0.7)	0.053	0.211	1.05 (0.77 to 1.33)	0.296	0.003	0.71 (0.48 to 0.95)	0.123	0.053
55	29	0.89 (0.66 to 1.13)	0.347	0.002	0.49 (0.31 to 0.67)	0.023	0.399	0.99 (0.72 to 1.27)	0.236	0.004	0.69 (0.45 to 0.92)	0.098	0.068
55	31	0.77 (0.53 to 1.01)	0.222	0.019	0.47 (0.29 to 0.66)	0.006	0.688	0.94 (0.66 to 1.21)	0.181	0.008	0.66 (0.43 to 0.9)	0.075	0.093
55	33	0.67 (0.42 to 0.92)	0.125	0.097	0.47 (0.27 to 0.66)	Ref.	Ref.	0.88 (0.6 to 1.17)	0.13	0.014	0.64 (0.4 to 0.88)	0.054	0.128
55	35	0.6 (0.34 to 0.87)	0.056	0.301	0.47 (0.27 to 0.67)	0.007	0.671	0.84 (0.55 to 1.12)	0.082	0.025	0.62 (0.38 to 0.87)	0.034	0.175
55	37	0.56 (0.28 to 0.84)	0.014	0.628	0.49 (0.28 to 0.7)	0.025	0.448	0.79 (0.5 to 1.09)	0.039	0.043	0.61 (0.36 to 0.85)	0.016	0.231
55	39	0.55 (0.24 to 0.86)	Ref.	Ref.	0.52 (0.29 to 0.75)	0.056	0.302	0.75 (0.45 to 1.06)	Ref.	Ref.	0.59 (0.34 to 0.84)	Ref.	Ref.
60	15	2.14 (1.8 to 2.48)	1.767	<0.001	0.71 (0.46 to 0.96)	0.454	<0.001	1.26 (0.92 to 1.61)	0.662	<0.001	0.7 (0.43 to 0.97)	0.325	0.002
60	17	1.87 (1.58 to 2.16)	1.496	<0.001	0.64 (0.42 to 0.85)	0.378	<0.001	1.18 (0.87 to 1.48)	0.576	<0.001	0.65 (0.41 to 0.9)	0.28	0.002
60	19	1.62 (1.37 to 1.87)	1.248	<0.001	0.57 (0.38 to 0.76)	0.31	0.001	1.1 (0.82 to 1.37)	0.496	<0.001	0.61 (0.38 to 0.85)	0.238	0.002
60	21	1.39 (1.18 to 1.61)	1.022	<0.001	0.51 (0.33 to 0.68)	0.248	0.001	1.02 (0.77 to 1.28)	0.421	<0.001	0.57 (0.35 to 0.8)	0.199	0.002

60	23	1.19 (1 to 1.39)	0.818	<0.001	0.45 (0.29 to 0.61)	0.193	0.003	0.95 (0.71 to 1.2)	0.352	<0.001	0.54 (0.32 to 0.76)	0.164	0.002
60	25	1.01 (0.83 to 1.19)	0.638	<0.001	0.4 (0.25 to 0.56)	0.144	0.009	0.89 (0.65 to 1.12)	0.289	<0.001	0.51 (0.29 to 0.72)	0.131	0.003
60	27	0.85 (0.67 to 1.03)	0.479	<0.001	0.36 (0.21 to 0.52)	0.103	0.034	0.83 (0.6 to 1.06)	0.231	0.001	0.48 (0.26 to 0.69)	0.103	0.006
60	29	0.72 (0.54 to 0.89)	0.343	<0.001	0.33 (0.17 to 0.48)	0.069	0.105	0.78 (0.55 to 1.01)	0.178	0.002	0.45 (0.24 to 0.67)	0.077	0.012
60	31	0.6 (0.42 to 0.78)	0.23	<0.001	0.3 (0.14 to 0.46)	0.041	0.257	0.73 (0.5 to 0.97)	0.131	0.005	0.43 (0.21 to 0.64)	0.055	0.028
60	33	0.51 (0.32 to 0.7)	0.138	0.007	0.28 (0.12 to 0.44)	0.021	0.487	0.69 (0.46 to 0.93)	0.09	0.013	0.41 (0.19 to 0.63)	0.036	0.063
60	35	0.44 (0.25 to 0.64)	0.07	0.055	0.27 (0.1 to 0.43)	0.007	0.752	0.66 (0.42 to 0.9)	0.055	0.031	0.4 (0.18 to 0.61)	0.021	0.128
60	37	0.4 (0.19 to 0.61)	0.024	0.225	0.26 (0.09 to 0.42)	0.000	0.997	0.63 (0.38 to 0.87)	0.024	0.066	0.38 (0.16 to 0.6)	0.009	0.231
60	39	0.37 (0.15 to 0.6)	Ref.	Ref.	0.26 (0.09 to 0.43)	Ref.	Ref.	0.6 (0.35 to 0.85)	Ref.	Ref.	0.37 (0.15 to 0.6)	Ref.	Ref.
65	15	1.91 (1.64 to 2.17)	1.558	<0.001	0.62 (0.43 to 0.81)	0.497	<0.001	1.19 (0.9 to 1.47)	0.601	<0.001	0.63 (0.4 to 0.86)	0.354	<0.001
65	17	1.66 (1.44 to 1.89)	1.316	<0.001	0.55 (0.38 to 0.72)	0.429	<0.001	1.09 (0.83 to 1.35)	0.508	<0.001	0.57 (0.35 to 0.79)	0.294	<0.001
65	19	1.44 (1.25 to 1.64)	1.095	<0.001	0.49 (0.33 to 0.65)	0.366	<0.001	1.01 (0.77 to 1.25)	0.423	<0.001	0.52 (0.3 to 0.73)	0.24	<0.001
65	21	1.24 (1.07 to 1.41)	0.893	<0.001	0.43 (0.28 to 0.58)	0.308	<0.001	0.93 (0.7 to 1.16)	0.346	<0.001	0.47 (0.26 to 0.68)	0.191	<0.001
65	23	1.06 (0.9 to 1.22)	0.712	<0.001	0.38 (0.23 to 0.52)	0.254	<0.001	0.86 (0.64 to 1.08)	0.276	<0.001	0.42 (0.22 to 0.63)	0.148	<0.001
65	25	0.9 (0.75 to 1.05)	0.552	<0.001	0.33 (0.19 to 0.47)	0.206	<0.001	0.8 (0.59 to 1.01)	0.214	<0.001	0.39 (0.18 to 0.59)	0.11	<0.001
65	27	0.76 (0.61 to 0.91)	0.412	<0.001	0.28 (0.14 to 0.42)	0.162	<0.001	0.74 (0.53 to 0.96)	0.16	0.001	0.35 (0.15 to 0.56)	0.078	<0.001
65	29	0.64 (0.49 to 0.79)	0.292	<0.001	0.24 (0.1 to 0.39)	0.123	<0.001	0.7 (0.49 to 0.91)	0.114	0.006	0.33 (0.12 to 0.53)	0.051	0.003
65	31	0.54 (0.39 to 0.69)	0.193	<0.001	0.21 (0.07 to 0.35)	0.089	0.001	0.66 (0.45 to 0.87)	0.076	0.030	0.31 (0.1 to 0.51)	0.03	0.020
65	33	0.46 (0.3 to 0.62)	0.114	0.004	0.18 (0.04 to 0.32)	0.059	0.007	0.63 (0.41 to 0.84)	0.045	0.103	0.29 (0.09 to 0.5)	0.014	0.104
65	35	0.4 (0.24 to 0.57)	0.056	0.056	0.16 (0.01 to 0.3)	0.035	0.031	0.61 (0.39 to 0.82)	0.022	0.258	0.28 (0.08 to 0.49)	0.004	0.341
65	37	0.37 (0.19 to 0.54)	0.018	0.264	0.14 (-0.01 to 0.28)	0.015	0.091	0.59 (0.37 to 0.81)	0.007	0.494	0.28 (0.07 to 0.48)	Ref.	Ref.
65	39	0.35 (0.16 to 0.53)	Ref.	Ref.	0.12 (-0.03 to 0.27)	Ref.	Ref.	0.58 (0.36 to 0.81)	Ref.	Ref.	0.28 (0.07 to 0.49)	0.001	0.841
70	15	1.84 (1.6 to 2.08)	1.375	<0.001	0.67 (0.49 to 0.85)	0.561	<0.001	1.26 (1 to 1.52)	0.567	<0.001	0.69 (0.48 to 0.91)	0.412	<0.001
70	17	1.61 (1.41 to 1.81)	1.142	<0.001	0.59 (0.43 to 0.75)	0.482	<0.001	1.15 (0.92 to 1.39)	0.463	<0.001	0.62 (0.4 to 0.83)	0.333	<0.001
70	19	1.4 (1.22 to 1.57)	0.931	<0.001	0.52 (0.37 to 0.67)	0.408	<0.001	1.06 (0.84 to 1.28)	0.369	<0.001	0.54 (0.34 to 0.75)	0.262	<0.001
70	21	1.21 (1.05 to 1.37)	0.741	<0.001	0.45 (0.31 to 0.59)	0.341	<0.001	0.98 (0.76 to 1.19)	0.285	<0.001	0.48 (0.28 to 0.69)	0.2	<0.001
70	23	1.04 (0.89 to 1.19)	0.573	<0.001	0.39 (0.25 to 0.53)	0.279	<0.001	0.9 (0.7 to 1.11)	0.212	<0.001	0.43 (0.23 to 0.63)	0.146	<0.001
70	25	0.89 (0.75 to 1.04)	0.427	<0.001	0.33 (0.2 to 0.47)	0.223	<0.001	0.84 (0.64 to 1.05)	0.15	<0.001	0.38 (0.18 to 0.58)	0.101	<0.001
70	27	0.77 (0.63 to 0.91)	0.302	<0.001	0.28 (0.15 to 0.42)	0.174	<0.001	0.79 (0.59 to 1)	0.099	<0.001	0.35 (0.15 to 0.55)	0.064	<0.001
70	29	0.67 (0.52 to 0.81)	0.199	<0.001	0.24 (0.1 to 0.37)	0.13	<0.001	0.75 (0.54 to 0.96)	0.058	0.004	0.32 (0.12 to 0.52)	0.035	0.003
70	31	0.58 (0.44 to 0.73)	0.117	<0.001	0.2 (0.06 to 0.34)	0.092	<0.001	0.72 (0.51 to 0.93)	0.028	0.042	0.3 (0.1 to 0.5)	0.015	0.065
70	33	0.52 (0.37 to 0.67)	0.056	0.015	0.17 (0.03 to 0.31)	0.06	0.001	0.7 (0.49 to 0.91)	0.009	0.231	0.29 (0.08 to 0.49)	0.003	0.438
70	35	0.48 (0.33 to 0.64)	0.017	0.173	0.14 (0 to 0.28)	0.034	0.009	0.69 (0.48 to 0.9)	Ref.	Ref.	0.28 (0.08 to 0.48)	Ref.	Ref.
70	37	0.47 (0.31 to 0.63)	Ref.	Ref.	0.12 (-0.02 to 0.27)	0.014	0.134	0.69 (0.48 to 0.9)	0.002	0.826	0.29 (0.08 to 0.49)	0.005	0.320

70	39	0.47 (0.3 to 0.64)	0.004	0.786	0.11 (-0.04 to 0.26)	Ref.	Ref.	0.71 (0.49 to 0.92)	0.014	0.441	0.3 (0.1 to 0.5)	0.018	0.094
75	15	1.95 (1.71 to 2.19)	1.261	<0.001	0.87 (0.68 to 1.05)	0.648	<0.001	1.48 (1.23 to 1.73)	0.579	<0.001	0.89 (0.67 to 1.11)	0.496	<0.001
75	17	1.7 (1.5 to 1.91)	1.019	<0.001	0.76 (0.59 to 0.92)	0.538	<0.001	1.36 (1.13 to 1.59)	0.458	<0.001	0.79 (0.57 to 1)	0.393	<0.001
75	19	1.49 (1.31 to 1.66)	0.802	<0.001	0.66 (0.51 to 0.81)	0.438	<0.001	1.25 (1.03 to 1.47)	0.351	<0.001	0.69 (0.49 to 0.9)	0.302	<0.001
75	21	1.3 (1.14 to 1.45)	0.611	<0.001	0.57 (0.43 to 0.71)	0.348	<0.001	1.16 (0.95 to 1.37)	0.258	<0.001	0.62 (0.41 to 0.82)	0.223	<0.001
75	23	1.13 (0.98 to 1.28)	0.447	<0.001	0.49 (0.35 to 0.62)	0.269	<0.001	1.08 (0.88 to 1.29)	0.18	<0.001	0.55 (0.35 to 0.75)	0.156	<0.001
75	25	0.99 (0.85 to 1.14)	0.308	<0.001	0.42 (0.28 to 0.55)	0.2	<0.001	1.02 (0.81 to 1.22)	0.116	<0.001	0.49 (0.29 to 0.69)	0.101	<0.001
75	27	0.88 (0.74 to 1.02)	0.194	<0.001	0.36 (0.23 to 0.49)	0.141	<0.001	0.97 (0.76 to 1.17)	0.065	0.002	0.45 (0.25 to 0.65)	0.058	<0.001
75	29	0.79 (0.65 to 0.94)	0.107	<0.001	0.31 (0.18 to 0.45)	0.092	<0.001	0.93 (0.73 to 1.14)	0.029	0.036	0.42 (0.22 to 0.62)	0.027	0.001
75	31	0.73 (0.58 to 0.88)	0.046	0.035	0.27 (0.14 to 0.41)	0.054	0.010	0.91 (0.7 to 1.12)	0.008	0.286	0.4 (0.2 to 0.6)	0.007	0.081
75	33	0.69 (0.54 to 0.84)	0.01	0.402	0.24 (0.11 to 0.38)	0.026	0.098	0.9 (0.7 to 1.11)	Ref.	Ref.	0.39 (0.19 to 0.59)	Ref.	Ref.
75	35	0.68 (0.53 to 0.84)	Ref.	Ref.	0.23 (0.09 to 0.37)	0.008	0.373	0.91 (0.7 to 1.12)	0.007	0.420	0.4 (0.2 to 0.6)	0.005	0.351
75	37	0.7 (0.53 to 0.87)	0.016	0.257	0.22 (0.08 to 0.36)	Ref.	Ref.	0.93 (0.72 to 1.14)	0.027	0.119	0.41 (0.21 to 0.61)	0.021	0.046
75	39	0.74 (0.56 to 0.92)	0.058	0.061	0.22 (0.07 to 0.37)	0.003	0.800	0.96 (0.75 to 1.18)	0.062	0.030	0.44 (0.24 to 0.64)	0.049	0.004
80	15	2.22 (1.96 to 2.47)	1.243	<0.001	1.21 (1.01 to 1.41)	0.803	<0.001	1.85 (1.6 to 2.11)	0.623	<0.001	1.21 (0.99 to 1.43)	0.602	<0.001
80	17	1.95 (1.73 to 2.16)	0.971	<0.001	1.05 (0.88 to 1.22)	0.643	<0.001	1.71 (1.48 to 1.95)	0.481	<0.001	1.08 (0.87 to 1.29)	0.47	<0.001
80	19	1.71 (1.52 to 1.89)	0.733	<0.001	0.91 (0.75 to 1.06)	0.501	<0.001	1.59 (1.37 to 1.81)	0.357	<0.001	0.97 (0.76 to 1.17)	0.355	<0.001
80	21	1.5 (1.34 to 1.67)	0.528	<0.001	0.78 (0.64 to 0.93)	0.376	<0.001	1.48 (1.27 to 1.7)	0.252	<0.001	0.87 (0.67 to 1.07)	0.256	<0.001
80	23	1.33 (1.18 to 1.49)	0.357	<0.001	0.68 (0.54 to 0.81)	0.269	<0.001	1.4 (1.19 to 1.6)	0.165	<0.001	0.78 (0.58 to 0.99)	0.173	<0.001
80	25	1.2 (1.05 to 1.34)	0.219	<0.001	0.59 (0.45 to 0.72)	0.18	<0.001	1.33 (1.12 to 1.53)	0.096	<0.001	0.72 (0.52 to 0.92)	0.106	<0.001
80	27	1.09 (0.94 to 1.24)	0.114	0.002	0.51 (0.38 to 0.65)	0.108	<0.001	1.28 (1.07 to 1.48)	0.046	0.010	0.67 (0.47 to 0.87)	0.056	<0.001
80	29	1.02 (0.87 to 1.17)	0.043	0.101	0.46 (0.32 to 0.6)	0.054	0.025	1.25 (1.04 to 1.45)	0.014	0.123	0.63 (0.43 to 0.83)	0.021	0.035
80	31	0.98 (0.83 to 1.14)	0.005	0.733	0.43 (0.29 to 0.56)	0.019	0.303	1.23 (1.02 to 1.44)	Ref.	Ref.	0.61 (0.41 to 0.81)	0.002	0.638
80	33	0.98 (0.81 to 1.14)	Ref.	Ref.	0.41 (0.27 to 0.55)	0	0.969	1.24 (1.03 to 1.45)	0.005	0.617	0.61 (0.41 to 0.81)	Ref.	Ref.
80	35	1 (0.83 to 1.18)	0.029	0.073	0.41 (0.26 to 0.55)	Ref.	Ref.	1.26 (1.04 to 1.48)	0.028	0.161	0.63 (0.42 to 0.83)	0.014	0.028
80	37	1.07 (0.87 to 1.26)	0.091	0.009	0.42 (0.27 to 0.58)	0.017	0.159	1.3 (1.08 to 1.52)	0.069	0.028	0.65 (0.45 to 0.86)	0.043	0.001
80	39	1.16 (0.94 to 1.38)	0.186	0.001	0.46 (0.29 to 0.63)	0.053	0.053	1.36 (1.13 to 1.59)	0.129	0.004	0.7 (0.49 to 0.91)	0.089	<0.001
85	15	2.66 (2.36 to 2.96)	1.325	<0.001	1.7 (1.46 to 1.93)	1.042	<0.001	2.38 (2.11 to 2.64)	0.693	<0.001	1.67 (1.44 to 1.9)	0.728	<0.001
85	17	2.34 (2.09 to 2.59)	1.005	<0.001	1.47 (1.27 to 1.66)	0.812	<0.001	2.21 (1.97 to 2.45)	0.525	<0.001	1.51 (1.29 to 1.72)	0.564	<0.001
85	19	2.07 (1.86 to 2.27)	0.73	<0.001	1.27 (1.1 to 1.44)	0.611	<0.001	2.07 (1.84 to 2.29)	0.381	<0.001	1.36 (1.15 to 1.57)	0.421	<0.001
85	21	1.83 (1.65 to 2.02)	0.498	<0.001	1.09 (0.94 to 1.25)	0.438	<0.001	1.94 (1.72 to 2.16)	0.259	<0.001	1.24 (1.03 to 1.45)	0.298	<0.001
85	23	1.65 (1.48 to 1.81)	0.31	<0.001	0.95 (0.8 to 1.1)	0.294	<0.001	1.85 (1.63 to 2.06)	0.161	0.001	1.14 (0.93 to 1.34)	0.197	<0.001
85	25	1.5 (1.34 to 1.67)	0.167	0.001	0.84 (0.69 to 0.98)	0.178	<0.001	1.77 (1.56 to 1.98)	0.086	0.014	1.06 (0.85 to 1.26)	0.116	<0.001
85	27	1.4 (1.24 to 1.57)	0.067	0.051	0.75 (0.6 to 0.89)	0.091	0.006	1.72 (1.51 to 1.93)	0.034	0.146	1 (0.79 to 1.2)	0.057	<0.001

85	29	1.35 (1.18 to 1.52)	0.012	0.521	0.69 (0.54 to 0.84)	0.032	0.188	1.69 (1.47 to 1.91)	0.006	0.645	0.96 (0.75 to 1.16)	0.018	0.009
85	31	1.34 (1.16 to 1.52)	Ref.	Ref.	0.66 (0.51 to 0.81)	0.002	0.890	1.69 (1.46 to 1.91)	Ref.	Ref.	0.94 (0.74 to 1.15)	Ref.	Ref.
85	33	1.37 (1.17 to 1.57)	0.033	0.111	0.66 (0.5 to 0.81)	Ref.	Ref.	1.7 (1.48 to 1.93)	0.018	0.180	0.94 (0.74 to 1.15)	0.003	0.707
85	35	1.45 (1.22 to 1.67)	0.109	0.013	0.68 (0.51 to 0.85)	0.027	0.125	1.74 (1.51 to 1.98)	0.058	0.036	0.97 (0.76 to 1.18)	0.027	0.126
85	37	1.57 (1.31 to 1.82)	0.23	0.001	0.74 (0.55 to 0.93)	0.082	0.034	1.81 (1.56 to 2.06)	0.122	0.006	1.01 (0.8 to 1.23)	0.072	0.013
85	39	1.73 (1.43 to 2.03)	0.394	<0.001	0.82 (0.6 to 1.05)	0.165	0.009	1.89 (1.63 to 2.16)	0.209	0.001	1.08 (0.85 to 1.3)	0.137	0.001
90	15	3.27 (2.88 to 3.67)	1.495	<0.001	2.33 (2 to 2.66)	1.359	<0.001	3.05 (2.75 to 3.35)	0.784	<0.001	2.26 (2 to 2.51)	0.877	<0.001
90	17	2.88 (2.56 to 3.2)	1.108	<0.001	2.01 (1.75 to 2.27)	1.041	<0.001	2.85 (2.58 to 3.13)	0.586	<0.001	2.05 (1.82 to 2.29)	0.675	<0.001
90	19	2.56 (2.29 to 2.82)	0.778	<0.001	1.74 (1.53 to 1.95)	0.766	<0.001	2.68 (2.43 to 2.94)	0.417	<0.001	1.88 (1.66 to 2.1)	0.499	<0.001
90	21	2.28 (2.06 to 2.51)	0.507	<0.001	1.5 (1.32 to 1.69)	0.532	<0.001	2.54 (2.3 to 2.78)	0.276	<0.001	1.73 (1.51 to 1.95)	0.35	<0.001
90	23	2.07 (1.86 to 2.28)	0.293	<0.001	1.31 (1.15 to 1.48)	0.341	<0.001	2.43 (2.2 to 2.67)	0.164	0.001	1.61 (1.39 to 1.82)	0.227	<0.001
90	25	1.91 (1.71 to 2.12)	0.138	0.003	1.16 (1 to 1.33)	0.192	<0.001	2.35 (2.11 to 2.58)	0.081	0.010	1.51 (1.3 to 1.72)	0.131	<0.001
90	27	1.82 (1.61 to 2.02)	0.04	0.088	1.06 (0.89 to 1.23)	0.086	0.008	2.29 (2.06 to 2.53)	0.026	0.097	1.44 (1.23 to 1.66)	0.061	0.002
90	29	1.78 (1.56 to 2)	Ref.	Ref.	0.99 (0.82 to 1.17)	0.022	0.225	2.27 (2.03 to 2.51)	Ref.	Ref.	1.4 (1.18 to 1.61)	0.017	0.106
90	31	1.8 (1.56 to 2.03)	0.018	0.480	0.97 (0.79 to 1.15)	Ref.	Ref.	2.27 (2.02 to 2.52)	0.002	0.882	1.38 (1.16 to 1.6)	Ref.	Ref.
90	33	1.87 (1.61 to 2.14)	0.094	0.087	0.99 (0.8 to 1.19)	0.021	0.364	2.3 (2.04 to 2.56)	0.034	0.337	1.39 (1.16 to 1.61)	0.009	0.477
90	35	2.01 (1.7 to 2.31)	0.228	0.011	1.06 (0.83 to 1.28)	0.084	0.102	2.36 (2.08 to 2.64)	0.093	0.092	1.42 (1.19 to 1.66)	0.045	0.114
90	37	2.2 (1.84 to 2.56)	0.42	0.001	1.16 (0.9 to 1.43)	0.189	0.027	2.45 (2.15 to 2.75)	0.182	0.021	1.49 (1.24 to 1.73)	0.106	0.022
90	39	2.45 (2.02 to 2.88)	0.67	<0.001	1.31 (0.98 to 1.64)	0.336	0.008	2.57 (2.23 to 2.9)	0.298	0.004	1.57 (1.31 to 1.84)	0.195	0.004

Estimated from linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviors and number of comorbidities. Age and BMI in square form. IADL limitation score range from 0=no limitation to 6=maximum limitation. Diff: difference between the prediction of the reference score (lowest limitation score of the age group) and the limitation score corresponding level. P diff: p difference between the prediction of the reference score and the limitation score corresponding level.

Table S3. Prediction of Mobility limitations mean score by age, sex and BMI

Age	BMI	Men Stroke			Men Non-stroke			Women stroke			Women non-stroke		
		Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff	Score (95%CI)	Diff	p diff
50	15	4.35 (3.3 to 5.39)	1.778	<0.001	3.02 (2.11 to 3.92)	0.721	0.046	2.39 (1.56 to 3.22)	Ref.	Ref.	1.96 (1.28 to 2.65)	Ref.	Ref.
50	17	3.98 (3.06 to 4.91)	1.415	<0.001	2.83 (2.02 to 3.64)	0.533	0.061	2.46 (1.71 to 3.21)	0.07	0.271	2.07 (1.45 to 2.7)	0.109	0.040
50	19	3.66 (2.82 to 4.5)	1.093	0.001	2.67 (1.93 to 3.41)	0.373	0.086	2.53 (1.84 to 3.22)	0.137	0.257	2.18 (1.6 to 2.77)	0.217	0.032
50	21	3.38 (2.6 to 4.16)	0.813	0.001	2.54 (1.85 to 3.23)	0.242	0.128	2.59 (1.94 to 3.24)	0.201	0.242	2.29 (1.73 to 2.84)	0.323	0.024
50	23	3.14 (2.4 to 3.89)	0.574	0.004	2.44 (1.77 to 3.1)	0.139	0.202	2.65 (2.03 to 3.27)	0.263	0.227	2.39 (1.85 to 2.93)	0.427	0.018
50	25	2.94 (2.22 to 3.67)	0.376	0.013	2.36 (1.71 to 3.02)	0.064	0.335	2.71 (2.11 to 3.31)	0.322	0.211	2.49 (1.96 to 3.02)	0.529	0.012
50	27	2.79 (2.07 to 3.5)	0.22	0.047	2.32 (1.66 to 2.97)	0.018	0.562	2.77 (2.17 to 3.36)	0.378	0.195	2.59 (2.07 to 3.12)	0.629	0.008
50	29	2.67 (1.96 to 3.39)	0.105	0.151	2.3 (1.64 to 2.95)	Ref.	Ref.	2.82 (2.23 to 3.41)	0.431	0.179	2.69 (2.16 to 3.22)	0.727	0.005
50	31	2.6 (1.88 to 3.32)	0.032	0.389	2.31 (1.65 to 2.97)	0.011	0.698	2.87 (2.28 to 3.46)	0.481	0.162	2.79 (2.25 to 3.32)	0.823	0.003
50	33	2.57 (1.84 to 3.3)	Ref.	Ref.	2.35 (1.68 to 3.01)	0.05	0.363	2.92 (2.32 to 3.51)	0.529	0.147	2.88 (2.34 to 3.42)	0.918	0.001
50	35	2.58 (1.84 to 3.32)	0.009	0.817	2.42 (1.74 to 3.09)	0.117	0.163	2.96 (2.36 to 3.57)	0.573	0.132	2.98 (2.43 to 3.52)	1.01	0.001
50	37	2.63 (1.87 to 3.39)	0.06	0.485	2.51 (1.82 to 3.2)	0.213	0.071	3 (2.39 to 3.62)	0.615	0.118	3.07 (2.51 to 3.62)	1.101	<0.001
50	39	2.72 (1.92 to 3.52)	0.152	0.272	2.64 (1.92 to 3.35)	0.338	0.034	3.04 (2.41 to 3.68)	0.654	0.106	3.15 (2.59 to 3.72)	1.19	<0.001
55	15	3.88 (3.02 to 4.73)	1.485	<0.001	2.59 (1.83 to 3.34)	0.495	0.034	2.35 (1.66 to 3.04)	Ref.	Ref.	1.86 (1.27 to 2.46)	Ref.	Ref.
55	17	3.57 (2.78 to 4.36)	1.178	<0.001	2.45 (1.74 to 3.16)	0.357	0.053	2.42 (1.78 to 3.06)	0.064	0.173	1.96 (1.4 to 2.52)	0.098	0.005
55	19	3.3 (2.56 to 4.03)	0.907	<0.001	2.33 (1.66 to 3.01)	0.241	0.088	2.48 (1.88 to 3.08)	0.126	0.158	2.06 (1.52 to 2.6)	0.196	0.003
55	21	3.06 (2.36 to 3.76)	0.671	<0.001	2.24 (1.59 to 2.89)	0.148	0.152	2.54 (1.96 to 3.11)	0.186	0.143	2.16 (1.63 to 2.68)	0.293	0.002
55	23	2.86 (2.18 to 3.54)	0.47	0.001	2.17 (1.53 to 2.81)	0.077	0.275	2.6 (2.04 to 3.15)	0.245	0.128	2.25 (1.74 to 2.77)	0.389	0.001
55	25	2.7 (2.03 to 3.36)	0.305	0.005	2.12 (1.49 to 2.76)	0.029	0.501	2.65 (2.11 to 3.2)	0.302	0.113	2.35 (1.84 to 2.86)	0.485	0.001
55	27	2.57 (1.91 to 3.23)	0.176	0.027	2.1 (1.46 to 2.73)	0.003	0.868	2.71 (2.17 to 3.25)	0.357	0.098	2.44 (1.93 to 2.95)	0.58	<0.001
55	29	2.47 (1.81 to 3.14)	0.082	0.117	2.09 (1.46 to 2.73)	Ref.	Ref.	2.76 (2.23 to 3.3)	0.411	0.084	2.54 (2.03 to 3.05)	0.674	<0.001
55	31	2.41 (1.75 to 3.08)	0.023	0.375	2.11 (1.47 to 2.75)	0.019	0.273	2.82 (2.28 to 3.36)	0.464	0.070	2.63 (2.12 to 3.14)	0.768	<0.001
55	33	2.39 (1.72 to 3.06)	Ref.	Ref.	2.15 (1.51 to 2.79)	0.061	0.074	2.87 (2.32 to 3.41)	0.514	0.058	2.72 (2.21 to 3.24)	0.861	<0.001
55	35	2.4 (1.73 to 3.08)	0.012	0.661	2.22 (1.57 to 2.86)	0.125	0.015	2.92 (2.37 to 3.46)	0.564	0.047	2.82 (2.3 to 3.33)	0.953	<0.001
55	37	2.45 (1.76 to 3.14)	0.06	0.307	2.3 (1.66 to 2.95)	0.212	0.003	2.96 (2.41 to 3.52)	0.611	0.038	2.91 (2.39 to 3.43)	1.045	<0.001
55	39	2.53 (1.83 to 3.24)	0.143	0.127	2.41 (1.76 to 3.07)	0.321	0.001	3.01 (2.45 to 3.57)	0.657	0.030	3 (2.48 to 3.52)	1.136	<0.001
60	15	3.53 (2.79 to 4.27)	1.238	<0.001	2.28 (1.61 to 2.96)	0.327	0.014	2.37 (1.77 to 2.97)	Ref.	Ref.	1.83 (1.29 to 2.37)	Ref.	Ref.
60	17	3.27 (2.56 to 3.97)	0.975	<0.001	2.18 (1.53 to 2.84)	0.227	0.028	2.42 (1.85 to 3)	0.055	0.113	1.92 (1.39 to 2.44)	0.085	<0.001
60	19	3.03 (2.36 to 3.71)	0.744	<0.001	2.1 (1.46 to 2.74)	0.145	0.057	2.48 (1.93 to 3.03)	0.111	0.097	2 (1.49 to 2.52)	0.172	<0.001
60	21	2.83 (2.18 to 3.49)	0.544	<0.001	2.04 (1.4 to 2.67)	0.081	0.122	2.54 (2 to 3.07)	0.166	0.081	2.09 (1.58 to 2.6)	0.259	<0.001

60	23	2.67 (2.02 to 3.31)	0.376	<0.001	1.99 (1.36 to 2.62)	0.036	0.263	2.59 (2.07 to 3.11)	0.221	0.067	2.18 (1.68 to 2.68)	0.346	<0.001
60	25	2.53 (1.89 to 3.17)	0.238	0.002	1.96 (1.34 to 2.59)	0.009	0.546	2.64 (2.13 to 3.16)	0.275	0.053	2.27 (1.77 to 2.77)	0.435	<0.001
60	27	2.42 (1.79 to 3.06)	0.132	0.019	1.96 (1.33 to 2.58)	Ref.	Ref.	2.7 (2.19 to 3.21)	0.33	0.041	2.36 (1.86 to 2.85)	0.524	<0.001
60	29	2.35 (1.71 to 2.98)	0.057	0.124	1.96 (1.34 to 2.59)	0.009	0.446	2.75 (2.24 to 3.26)	0.384	0.031	2.45 (1.95 to 2.94)	0.613	<0.001
60	31	2.3 (1.67 to 2.94)	0.013	0.491	1.99 (1.37 to 2.62)	0.037	0.103	2.81 (2.3 to 3.32)	0.438	0.022	2.54 (2.04 to 3.04)	0.704	<0.001
60	33	2.29 (1.65 to 2.93)	Ref.	Ref.	2.04 (1.41 to 2.67)	0.083	0.009	2.86 (2.35 to 3.38)	0.492	0.015	2.63 (2.13 to 3.13)	0.795	<0.001
60	35	2.31 (1.66 to 2.95)	0.019	0.343	2.1 (1.47 to 2.73)	0.147	<0.001	2.91 (2.4 to 3.43)	0.546	0.010	2.72 (2.22 to 3.22)	0.887	<0.001
60	37	2.36 (1.71 to 3.01)	0.068	0.097	2.18 (1.55 to 2.81)	0.229	<0.001	2.97 (2.45 to 3.49)	0.599	0.006	2.81 (2.31 to 3.31)	0.98	<0.001
60	39	2.44 (1.78 to 3.1)	0.149	0.023	2.29 (1.65 to 2.92)	0.33	<0.001	3.02 (2.5 to 3.55)	0.652	0.003	2.91 (2.4 to 3.41)	1.074	<0.001
65	15	3.3 (2.61 to 3.99)	1.038	<0.001	2.1 (1.46 to 2.75)	0.214	0.010	2.44 (1.88 to 2.99)	Ref.	Ref.	1.87 (1.36 to 2.38)	Ref.	Ref.
65	17	3.07 (2.41 to 3.74)	0.808	<0.001	2.03 (1.39 to 2.66)	0.139	0.023	2.48 (1.95 to 3.02)	0.046	0.108	1.94 (1.44 to 2.45)	0.071	<0.001
65	19	2.87 (2.22 to 3.52)	0.606	<0.001	1.97 (1.34 to 2.6)	0.081	0.058	2.53 (2.01 to 3.05)	0.093	0.085	2.01 (1.51 to 2.51)	0.144	<0.001
65	21	2.7 (2.06 to 3.33)	0.433	<0.001	1.93 (1.3 to 2.55)	0.038	0.144	2.58 (2.07 to 3.09)	0.141	0.065	2.09 (1.59 to 2.59)	0.22	<0.001
65	23	2.55 (1.93 to 3.18)	0.289	<0.001	1.9 (1.28 to 2.52)	0.011	0.349	2.63 (2.13 to 3.13)	0.191	0.047	2.17 (1.67 to 2.66)	0.297	<0.001
65	25	2.44 (1.81 to 3.06)	0.174	0.002	1.89 (1.27 to 2.51)	Ref.	Ref.	2.68 (2.18 to 3.18)	0.242	0.032	2.25 (1.75 to 2.74)	0.378	<0.001
65	27	2.35 (1.73 to 2.98)	0.087	0.033	1.89 (1.27 to 2.51)	0.005	0.646	2.73 (2.23 to 3.23)	0.295	0.021	2.33 (1.84 to 2.82)	0.46	<0.001
65	29	2.29 (1.67 to 2.92)	0.03	0.274	1.91 (1.29 to 2.53)	0.025	0.170	2.79 (2.29 to 3.29)	0.349	0.012	2.41 (1.92 to 2.91)	0.545	<0.001
65	31	2.27 (1.64 to 2.89)	0	0.975	1.95 (1.33 to 2.57)	0.061	0.015	2.84 (2.34 to 3.34)	0.404	0.007	2.5 (2.01 to 3)	0.632	<0.001
65	33	2.26 (1.64 to 2.89)	Ref.	Ref.	2 (1.38 to 2.62)	0.113	<0.001	2.9 (2.4 to 3.4)	0.461	0.003	2.59 (2.1 to 3.09)	0.721	<0.001
65	35	2.29 (1.66 to 2.92)	0.028	0.064	2.07 (1.45 to 2.69)	0.18	<0.001	2.96 (2.45 to 3.46)	0.519	0.001	2.68 (2.19 to 3.18)	0.813	<0.001
65	37	2.35 (1.72 to 2.99)	0.085	0.009	2.15 (1.53 to 2.78)	0.264	<0.001	3.02 (2.51 to 3.52)	0.578	<0.001	2.78 (2.28 to 3.27)	0.907	<0.001
65	39	2.44 (1.79 to 3.08)	0.171	0.001	2.25 (1.63 to 2.88)	0.363	<0.001	3.08 (2.57 to 3.59)	0.639	<0.001	2.87 (2.38 to 3.37)	1.004	<0.001
70	15	3.2 (2.53 to 3.87)	0.898	<0.001	2.05 (1.41 to 2.69)	0.152	0.050	2.56 (2.03 to 3.1)	Ref.	Ref.	1.98 (1.47 to 2.48)	Ref.	Ref.
70	17	2.99 (2.34 to 3.64)	0.688	<0.001	1.99 (1.36 to 2.62)	0.092	0.109	2.59 (2.08 to 3.11)	0.034	0.178	2.03 (1.53 to 2.53)	0.055	<0.001
70	19	2.81 (2.17 to 3.44)	0.506	<0.001	1.94 (1.32 to 2.57)	0.046	0.239	2.63 (2.12 to 3.14)	0.071	0.135	2.09 (1.59 to 2.59)	0.113	<0.001
70	21	2.65 (2.02 to 3.28)	0.352	<0.001	1.91 (1.29 to 2.53)	0.016	0.506	2.67 (2.17 to 3.17)	0.112	0.097	2.15 (1.66 to 2.65)	0.176	<0.001
70	23	2.53 (1.9 to 3.15)	0.225	<0.001	1.9 (1.28 to 2.52)	0	0.966	2.72 (2.22 to 3.21)	0.156	0.065	2.22 (1.73 to 2.71)	0.243	<0.001
70	25	2.43 (1.81 to 3.05)	0.127	<0.001	1.89 (1.28 to 2.51)	Ref.	Ref.	2.76 (2.27 to 3.26)	0.202	0.040	2.29 (1.8 to 2.78)	0.314	<0.001
70	27	2.36 (1.74 to 2.98)	0.057	0.013	1.91 (1.29 to 2.53)	0.015	0.101	2.81 (2.32 to 3.31)	0.252	0.022	2.37 (1.87 to 2.86)	0.389	<0.001
70	29	2.32 (1.69 to 2.94)	0.014	0.197	1.94 (1.32 to 2.56)	0.044	0.006	2.87 (2.37 to 3.36)	0.306	0.010	2.45 (1.95 to 2.94)	0.468	<0.001
70	31	2.3 (1.68 to 2.92)	Ref.	Ref.	1.98 (1.36 to 2.6)	0.089	<0.001	2.92 (2.43 to 3.42)	0.362	0.004	2.53 (2.04 to 3.02)	0.552	<0.001
70	33	2.31 (1.69 to 2.94)	0.014	0.253	2.04 (1.42 to 2.66)	0.148	<0.001	2.98 (2.48 to 3.48)	0.421	0.001	2.62 (2.12 to 3.11)	0.639	<0.001
70	35	2.36 (1.73 to 2.98)	0.055	0.031	2.12 (1.5 to 2.74)	0.223	<0.001	3.04 (2.55 to 3.54)	0.484	<0.001	2.71 (2.22 to 3.2)	0.731	<0.001

70	37	2.43 (1.8 to 3.06)	0.124	0.003	2.21 (1.59 to 2.83)	0.312	<0.001	3.11 (2.61 to 3.61)	0.55	<0.001	2.8 (2.31 to 3.3)	0.826	<0.001
70	39	2.52 (1.89 to 3.16)	0.222	<0.001	2.31 (1.69 to 2.94)	0.417	<0.001	3.18 (2.68 to 3.68)	0.619	<0.001	2.9 (2.41 to 3.4)	0.926	<0.001
75	15	3.22 (2.55 to 3.89)	0.808	<0.001	2.12 (1.48 to 2.76)	0.139	0.045	2.73 (2.21 to 3.26)	Ref.	Ref.	2.15 (1.65 to 2.66)	Ref.	Ref.
75	17	3.02 (2.37 to 3.67)	0.606	<0.001	2.06 (1.43 to 2.69)	0.081	0.094	2.76 (2.24 to 3.27)	0.021	0.382	2.19 (1.69 to 2.69)	0.037	0.013
75	19	2.84 (2.21 to 3.48)	0.432	<0.001	2.02 (1.39 to 2.64)	0.038	0.200	2.78 (2.28 to 3.29)	0.047	0.297	2.23 (1.74 to 2.73)	0.079	0.004
75	21	2.7 (2.07 to 3.33)	0.288	<0.001	1.99 (1.37 to 2.61)	0.011	0.418	2.81 (2.31 to 3.31)	0.078	0.217	2.28 (1.79 to 2.77)	0.128	0.001
75	23	2.58 (1.96 to 3.21)	0.173	0.001	1.98 (1.36 to 2.6)	Ref.	Ref.	2.85 (2.35 to 3.34)	0.115	0.147	2.34 (1.85 to 2.83)	0.183	<0.001
75	25	2.5 (1.88 to 3.12)	0.086	0.017	1.98 (1.36 to 2.6)	0.005	0.647	2.89 (2.4 to 3.38)	0.156	0.089	2.4 (1.91 to 2.89)	0.244	<0.001
75	27	2.44 (1.82 to 3.06)	0.029	0.216	2 (1.39 to 2.62)	0.026	0.190	2.94 (2.44 to 3.43)	0.203	0.047	2.46 (1.97 to 2.96)	0.311	<0.001
75	29	2.41 (1.79 to 3.03)	0	0.981	2.04 (1.42 to 2.66)	0.063	0.019	2.99 (2.49 to 3.48)	0.254	0.021	2.54 (2.05 to 3.03)	0.384	<0.001
75	31	2.41 (1.79 to 3.03)	Ref.	Ref.	2.09 (1.48 to 2.71)	0.116	<0.001	3.05 (2.55 to 3.54)	0.311	0.007	2.62 (2.13 to 3.11)	0.463	<0.001
75	33	2.44 (1.82 to 3.07)	0.029	0.019	2.16 (1.54 to 2.78)	0.185	<0.001	3.11 (2.61 to 3.6)	0.373	0.002	2.7 (2.21 to 3.19)	0.548	<0.001
75	35	2.5 (1.87 to 3.13)	0.088	0.001	2.25 (1.63 to 2.87)	0.27	<0.001	3.18 (2.68 to 3.67)	0.441	<0.001	2.79 (2.3 to 3.28)	0.64	<0.001
75	37	2.59 (1.96 to 3.22)	0.175	<0.001	2.35 (1.73 to 2.97)	0.371	<0.001	3.25 (2.75 to 3.75)	0.513	<0.001	2.89 (2.4 to 3.38)	0.737	<0.001
75	39	2.7 (2.06 to 3.34)	0.291	<0.001	2.47 (1.84 to 3.09)	0.487	<0.001	3.33 (2.82 to 3.83)	0.59	<0.001	2.99 (2.5 to 3.49)	0.84	<0.001
80	15	3.36 (2.69 to 4.03)	0.78	<0.001	2.31 (1.67 to 2.96)	0.165	0.025	2.96 (2.44 to 3.49)	Ref.	Ref.	2.4 (1.9 to 2.9)	Ref.	Ref.
80	17	3.15 (2.5 to 3.8)	0.574	<0.001	2.24 (1.61 to 2.88)	0.096	0.059	2.97 (2.46 to 3.48)	0.006	0.797	2.42 (1.92 to 2.91)	0.017	0.262
80	19	2.98 (2.34 to 3.62)	0.399	<0.001	2.19 (1.57 to 2.82)	0.045	0.142	2.98 (2.48 to 3.48)	0.019	0.660	2.44 (1.95 to 2.94)	0.042	0.137
80	21	2.84 (2.21 to 3.47)	0.256	<0.001	2.16 (1.54 to 2.78)	0.013	0.342	3 (2.5 to 3.5)	0.04	0.517	2.48 (1.98 to 2.97)	0.076	0.057
80	23	2.73 (2.1 to 3.35)	0.145	0.002	2.15 (1.53 to 2.77)	Ref.	Ref.	3.03 (2.53 to 3.52)	0.068	0.377	2.52 (2.03 to 3.01)	0.117	0.017
80	25	2.65 (2.02 to 3.27)	0.065	0.026	2.15 (1.53 to 2.77)	0.005	0.633	3.06 (2.57 to 3.56)	0.103	0.249	2.57 (2.08 to 3.06)	0.167	0.003
80	27	2.6 (1.97 to 3.22)	0.017	0.239	2.18 (1.56 to 2.8)	0.029	0.146	3.11 (2.61 to 3.6)	0.146	0.143	2.63 (2.13 to 3.12)	0.225	<0.001
80	29	2.58 (1.96 to 3.2)	Ref.	Ref.	2.22 (1.6 to 2.84)	0.072	0.008	3.16 (2.66 to 3.65)	0.195	0.069	2.69 (2.2 to 3.18)	0.292	<0.001
80	31	2.6 (1.97 to 3.22)	0.015	0.297	2.28 (1.66 to 2.9)	0.133	<0.001	3.21 (2.72 to 3.71)	0.253	0.026	2.77 (2.28 to 3.26)	0.366	<0.001
80	33	2.64 (2.01 to 3.27)	0.062	0.041	2.36 (1.74 to 2.98)	0.213	<0.001	3.28 (2.78 to 3.78)	0.317	0.007	2.85 (2.36 to 3.34)	0.449	<0.001
80	35	2.72 (2.09 to 3.35)	0.14	0.004	2.46 (1.84 to 3.08)	0.312	<0.001	3.35 (2.85 to 3.85)	0.389	0.001	2.94 (2.45 to 3.43)	0.54	<0.001
80	37	2.83 (2.19 to 3.47)	0.25	<0.001	2.58 (1.95 to 3.2)	0.429	<0.001	3.43 (2.93 to 3.93)	0.468	<0.001	3.04 (2.55 to 3.53)	0.639	<0.001
80	39	2.97 (2.32 to 3.62)	0.391	<0.001	2.71 (2.09 to 3.34)	0.565	<0.001	3.52 (3.01 to 4.02)	0.554	<0.001	3.15 (2.65 to 3.64)	0.747	<0.001
85	15	3.62 (2.94 to 4.31)	0.802	<0.001	2.64 (1.98 to 3.29)	0.229	0.016	3.24 (2.71 to 3.77)	0.012	0.804	2.72 (2.21 to 3.22)	0.004	0.796
85	17	3.4 (2.74 to 4.06)	0.579	<0.001	2.54 (1.91 to 3.18)	0.137	0.034	3.23 (2.72 to 3.74)	0.001	0.965	2.71 (2.21 to 3.21)	Ref.	Ref.
85	19	3.22 (2.57 to 3.86)	0.392	<0.001	2.47 (1.85 to 3.1)	0.068	0.078	3.23 (2.72 to 3.73)	Ref.	Ref.	2.72 (2.22 to 3.21)	0.006	0.676
85	21	3.07 (2.43 to 3.7)	0.242	0.003	2.43 (1.8 to 3.05)	0.023	0.192	3.24 (2.74 to 3.74)	0.009	0.645	2.73 (2.24 to 3.23)	0.023	0.399
85	23	2.95 (2.32 to 3.58)	0.127	0.027	2.41 (1.78 to 3.03)	Ref.	Ref.	3.26 (2.76 to 3.75)	0.027	0.442	2.76 (2.27 to 3.25)	0.05	0.179

85	25	2.87 (2.25 to 3.5)	0.049	0.191	2.41 (1.79 to 3.03)	0.001	0.971	3.28 (2.79 to 3.78)	0.055	0.263	2.8 (2.31 to 3.29)	0.088	0.053
85	27	2.83 (2.2 to 3.46)	0.006	0.732	2.43 (1.81 to 3.05)	0.024	0.321	3.32 (2.83 to 3.82)	0.093	0.130	2.85 (2.36 to 3.34)	0.137	0.008
85	29	2.82 (2.19 to 3.45)	Ref.	Ref.	2.48 (1.86 to 3.1)	0.071	0.033	3.37 (2.87 to 3.87)	0.14	0.051	2.91 (2.41 to 3.4)	0.196	0.001
85	31	2.85 (2.22 to 3.49)	0.03	0.141	2.55 (1.92 to 3.17)	0.14	0.001	3.43 (2.93 to 3.93)	0.197	0.015	2.98 (2.48 to 3.47)	0.265	<0.001
85	33	2.92 (2.28 to 3.56)	0.095	0.027	2.64 (2.01 to 3.27)	0.233	<0.001	3.49 (2.99 to 4)	0.264	0.004	3.06 (2.56 to 3.55)	0.346	<0.001
85	35	3.02 (2.37 to 3.67)	0.197	0.005	2.76 (2.13 to 3.39)	0.349	<0.001	3.57 (3.06 to 4.08)	0.34	0.001	3.15 (2.65 to 3.64)	0.437	<0.001
85	37	3.16 (2.49 to 3.82)	0.335	0.001	2.89 (2.26 to 3.53)	0.488	<0.001	3.66 (3.14 to 4.17)	0.426	<0.001	3.25 (2.75 to 3.75)	0.538	<0.001
85	39	3.33 (2.64 to 4.02)	0.508	<0.001	3.06 (2.41 to 3.71)	0.65	<0.001	3.75 (3.23 to 4.28)	0.522	<0.001	3.36 (2.86 to 3.86)	0.65	<0.001
90	15	4.01 (3.27 to 4.75)	0.873	<0.001	3.08 (2.38 to 3.78)	0.34	0.041	3.57 (3.03 to 4.12)	0.05	0.531	3.1 (2.58 to 3.62)	0.043	0.481
90	17	3.76 (3.07 to 4.45)	0.622	<0.001	2.96 (2.29 to 3.62)	0.214	0.073	3.54 (3.02 to 4.07)	0.021	0.670	3.07 (2.57 to 3.58)	0.016	0.676
90	19	3.55 (2.89 to 4.22)	0.413	0.001	2.86 (2.22 to 3.5)	0.116	0.143	3.53 (3.01 to 4.04)	0.005	0.845	3.06 (2.56 to 3.56)	0.001	0.941
90	21	3.39 (2.74 to 4.03)	0.247	0.004	2.79 (2.16 to 3.42)	0.048	0.301	3.52 (3.02 to 4.03)	Ref.	Ref.	3.06 (2.56 to 3.56)	Ref.	Ref.
90	23	3.26 (2.62 to 3.9)	0.122	0.024	2.75 (2.12 to 3.38)	0.01	0.643	3.53 (3.03 to 4.04)	0.008	0.704	3.07 (2.57 to 3.57)	0.012	0.394
90	25	3.18 (2.54 to 3.82)	0.04	0.121	2.74 (2.11 to 3.37)	Ref.	Ref.	3.55 (3.05 to 4.06)	0.028	0.466	3.1 (2.6 to 3.59)	0.037	0.143
90	27	3.14 (2.5 to 3.78)	Ref.	Ref.	2.76 (2.13 to 3.39)	0.02	0.245	3.58 (3.08 to 4.09)	0.06	0.266	3.13 (2.64 to 3.63)	0.075	0.029
90	29	3.14 (2.5 to 3.78)	0.002	0.935	2.81 (2.18 to 3.44)	0.068	0.034	3.63 (3.12 to 4.14)	0.104	0.128	3.18 (2.69 to 3.68)	0.126	0.003
90	31	3.18 (2.53 to 3.84)	0.046	0.389	2.89 (2.26 to 3.52)	0.147	0.003	3.68 (3.17 to 4.2)	0.16	0.053	3.25 (2.75 to 3.75)	0.191	<0.001
90	33	3.27 (2.61 to 3.94)	0.133	0.123	3 (2.36 to 3.63)	0.254	<0.001	3.75 (3.23 to 4.27)	0.229	0.020	3.33 (2.82 to 3.83)	0.268	<0.001
90	35	3.4 (2.71 to 4.09)	0.262	0.035	3.13 (2.48 to 3.78)	0.39	<0.001	3.83 (3.3 to 4.36)	0.31	0.007	3.42 (2.91 to 3.92)	0.359	<0.001
90	37	3.57 (2.85 to 4.29)	0.432	0.010	3.3 (2.63 to 3.97)	0.556	<0.001	3.93 (3.38 to 4.47)	0.403	0.003	3.52 (3.01 to 4.03)	0.463	<0.001
90	39	3.78 (3.01 to 4.55)	0.645	0.003	3.49 (2.79 to 4.2)	0.751	<0.001	4.03 (3.47 to 4.6)	0.508	0.001	3.64 (3.11 to 4.16)	0.58	<0.001

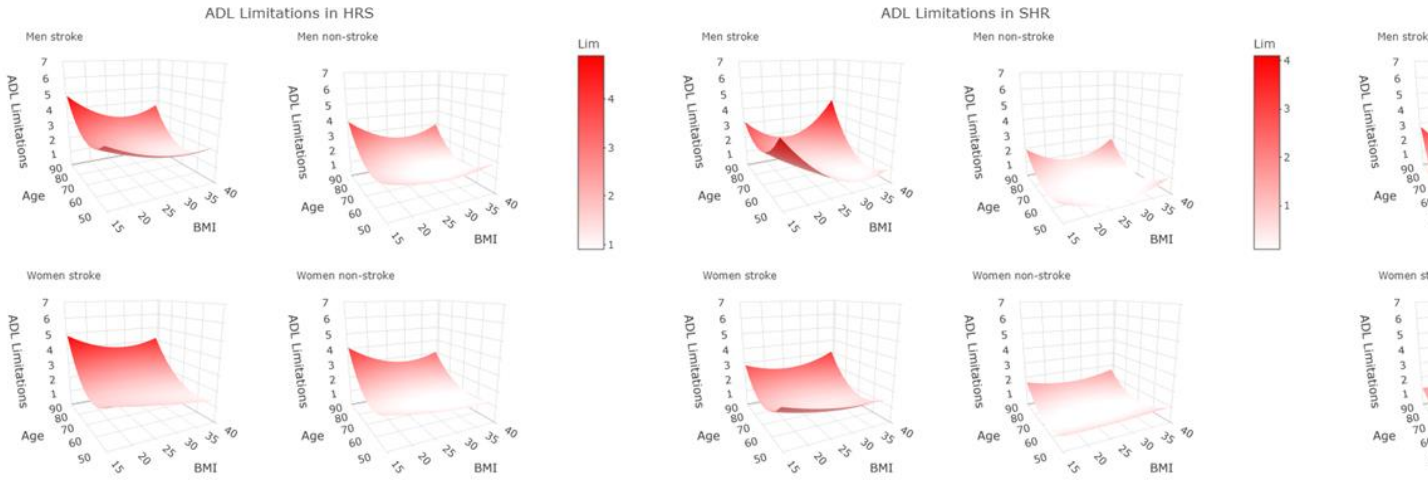
Estimated from linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviors and number of comorbidities. Age and BMI in square form. Mobility limitation score range from 0=no limitation to 6=maximum limitation Diff: difference between the prediction of the reference score (lowest limitation score of the age group) and the limitation score corresponding level. P diff: p difference between the prediction of the reference score and the limitation score corresponding level.

Table S4. Characteristics of the target population at first interview according included or excluded category

Characteristics	Included (N=129,216)	Excluded (N=61,374)	p value
Sex			< 0.001
Men	57272 (44.3)	29716 (48.4%)	
Women	71944 (55.7)	31655 (51.6%)	
Age (years)			< 0.001
Mean (SD)	58.59 (4.62)	58.03 (4.61)	
Education level			< 0.001
Low	34235 (26.5)	13779 (25.2)	
Middle	63602 (49.2)	27247 (49.8)	
High	31379 (24.3)	13709 (25.0)	
Marital status			< 0.001
Single/divorced/widowed	46347 (35.9)	19946 (33.0)	
Married/Cohabiting	82869 (64.1)	40568 (67.0)	
Smoking status			< 0.001
Non smoking	127609 (98.8)	60424 (98.5)	
Current smoking	1607 (1.2)	950 (1.5)	
Alcohol consumption			< 0.001
Non drinkers	126200 (97.7)	58591 (95.5)	
Moderate drinkers	2758 (2.1)	2568 (4.2)	
Heavy drinkers	258 (0.2)	215 (0.4)	
MVPA			< 0.001
No	126430 (97.8)	58323 (95.0)	
Yes	2786 (2.2)	3051 (5.0)	
Number of comorbidities			< 0.001
0	125519 (97.1)	59488 (96.9)	
1	1936 (1.5)	1287 (2.1)	
2	1209 (0.9)	426 (0.7)	
3 or more	552 (0.4)	173 (0.3)	
ADL limitation Score (0-7)			< 0.001
Mean (SD)	0.01 (0.10)	0.00 (0.07)	
IADL limitation Score (0-6)			0.042
Mean (SD)	0.01 (0.11)	0.01 (0.11)	
Mobility limitation Score (0-6)			< 0.001
Mean (SD)	0.09 (0.54)	0.06 (0.41)	

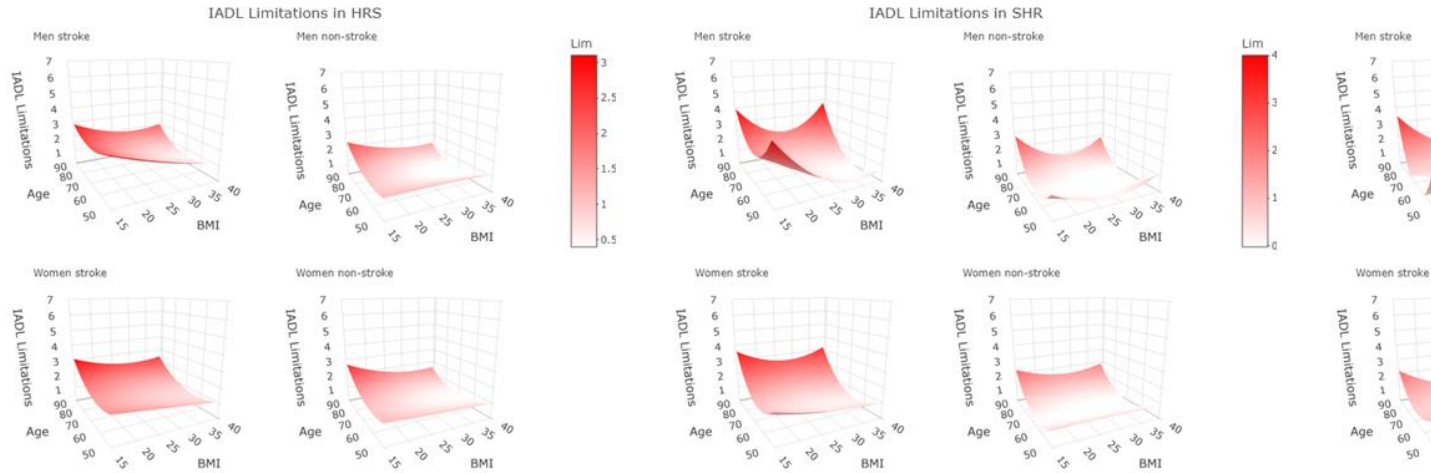
Values are numbers (percentages) otherwise stated. Percentage is reported in column. *MVPA: moderate to vigorous physical activity

Figure S1. Mean ADL limitation score as a function of age and BMI stratified by sex and survey in the chronic phase of stroke survivors and controls.



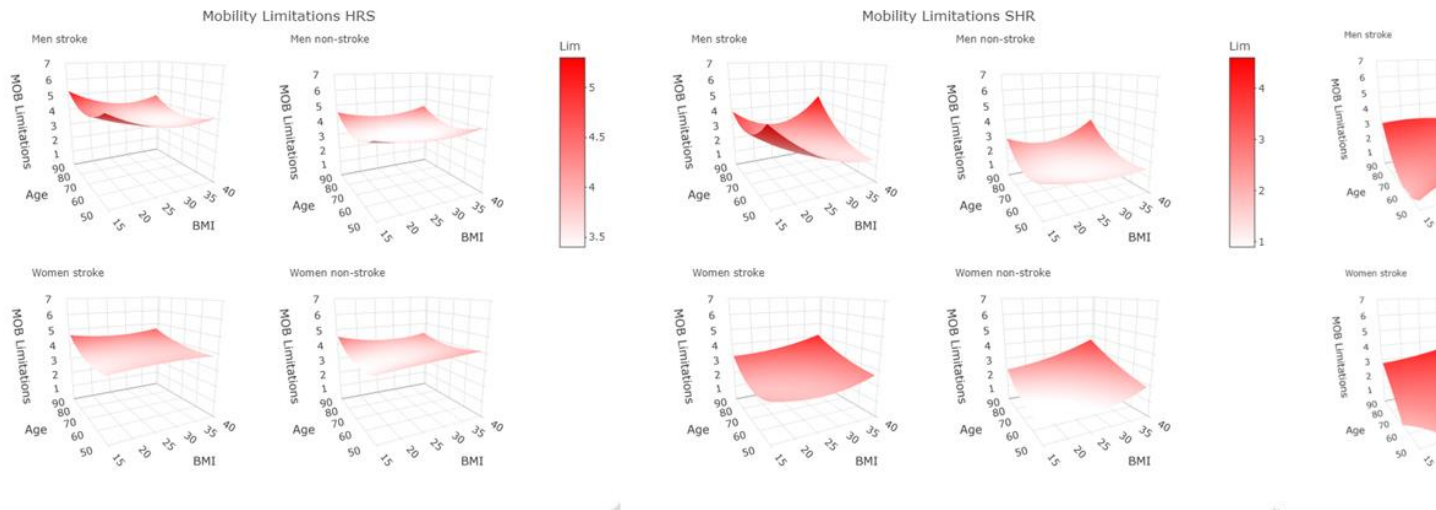
Estimated from linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviors and number of comorbidities. Age and BMI in square form. ADL score range from 0=no limitation to 7=maximum limitation. ADL: activities of daily living.

Figure S2. Mean IADL limitation score as a function of age and BMI stratified by sex and survey in the chronic phase of stroke survivors and controls.



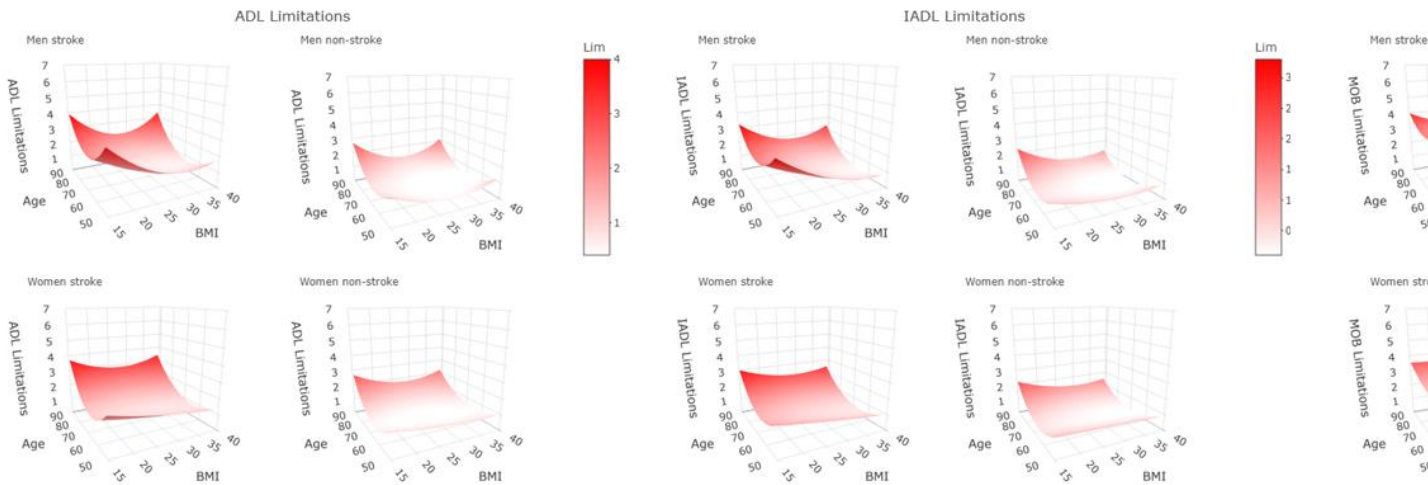
Estimated from linear mixed model adjusted for socioeconomic variables, age to stroke, health behaviors and number of comorbidities. Age groups of 5 years from 50 to 90. Age and BMI in square form. IADL: instrumental activities of daily living. IADL score range from 0=no limitation to 6=maximum limitation.

Figure S3. Mean mobility limitation score as a function of age and BMI stratified by sex and survey in the chronic phase of stroke survivors and controls.



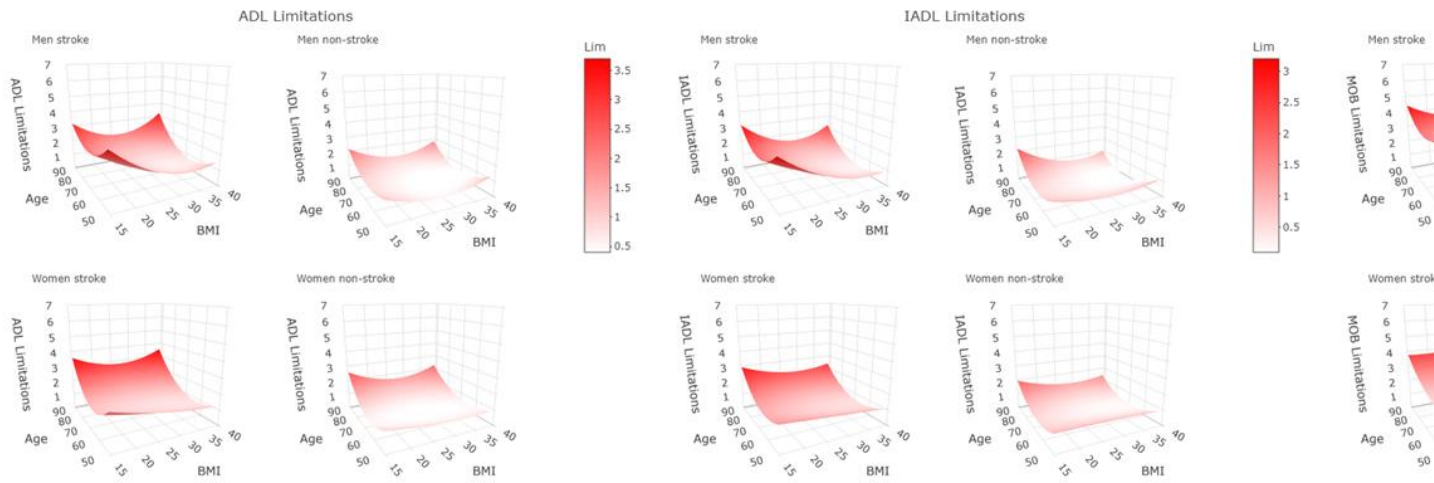
Estimated from linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviors and number of comorbidities. Age and BMI in square form. Mob: Mobility. score range from 0=no limitation to 6=maximum limitation.

Figure S4. Mean limitation score as a function of age and BMI stratified by sex in the chronic phase of stroke survivors and controls without mortality report.



Estimated from linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviors and number of comorbidities. Age and BMI in square form. ADL: activities of daily living, IADL: instrumental ADL, MOB: mobility. ADL scores range from 0 (no limitation) to 7 (maximum limitation) and from 0 to 6 for IADL and mobility limitations.

Figure S5. Mean limitation score as a function of age and BMI stratified by sex in the chronic phase for stroke survivors and controls with follow-up restricted to 6 years after stroke.



Estimated from linear mixed model adjusted for socioeconomic variables, age at stroke, health behaviors and number of comorbidities. Age and BMI in square form. ADL: activities of daily living, IADL: instrumental ADL, MOB: mobility. ADL scores range from 0 (no limitation) to 7 (maximum limitation) and from 0 to 6 for IADL and mobility limitations.

Figure S6. Mean limitation score as a function of age and BMI stratified by sex in the chronic phase for stroke survivors and controls adjusted to difference between last measure of BMI and current BMI.

