

## **Details of included treatable traits from the ELSA data set**

***Dyspnoea/ breathlessness:*** The severity of breathlessness was determined using a modified Medical Research Council (mMRC) dyspnoea scale [1]. The full MRC scale comprises five grades. However, ELSA used only three grades i.e., Grade 1 “*short of breath when hurrying or walking up a slight hill*”; Grade 2 “*walks slower than contemporaries on level ground because of breathlessness*”; Grade 3 “*has to stop for breath when walking at own pace on level ground*”. Grade 0 was allocated to those who did not report dyspnoea.

***Chronic sputum production:*** Chronic sputum production was measured as a dichotomous variable (yes/no). Self-report of “*brings phlegm from chest up on most days for as much as 3 months/year*” was regarded as an affirmative response.

***Chronic bronchitis:*** Chronic bronchitis was measured as a dichotomous variable (yes/no). The response was considered “yes” when the participant self-reported that he/she “*had chronic bronchitis or taking medication for it*”.

***Frequent chest infections:*** Frequent chest infection/s was measured as a dichotomous variable (yes/no). Self-report of “*had any chest infection/s in last 3 weeks*” was regarded as an affirmative response.

***Osteoporosis:*** This was measured as a dichotomous variable (yes/no). The response was considered “yes” when the participant self-reported that he/she “*had osteoporosis or taking medication for it*”.

***Cardiovascular disease:*** The participants were considered to have CVD (yes/no) in the presence of one or more of the following; high BP (140/90 mmHg or higher), history of angina, myocardial infarction, heart attack, high cholesterol, congestive heart failure, stroke, heart murmur or abnormal heart rhythm.

**Comorbidities/significant medical history:** Each comorbidity was measured as a dichotomous variable (yes/no). Participants self-reported the presence of “*chronic disease/s or reported taking medications for it/them*”, including diabetes, cancer, arthritis, and psychiatric problems.

**Depression:** A brief version of the Center for Epidemiological Studies-Depression (CES-D) scale was used for determining the depressive symptoms [2]. The scale comprises eight questions about the depressive symptoms experienced a week before the interview. A dichotomous variable (yes/no) was derived and a validated cut-off point of  $\geq 3$  depressive symptoms was termed as depression [3].

**Body mass index:** Anthropometric data (weight, height) were measured by the nurse. The bodyweight of study participants was determined through Tanita electronic scales, in the absence of shoes and light clothing. A Stadiometer with the Frankfort plane lying in the horizontal direction was used to measure the height. The formulae: [weight (kilograms)/height (metres) squared] was used for calculating body mass index (BMI). Respondents were classified as “underweight ( $<18.5 \text{ kg/m}^2$ )” or “obese ( $\geq 30 \text{ kg/m}^2$ )” based on their BMI [4].

**Sarcopaenia:** The handgrip strength (dominant/non-dominant hand) was determined through a Smedley handheld dynamometer (Stoelting, Illinois, USA). Individuals held the dynamometer perpendicular to their bodies and applied maximum force for a few seconds upon instruction. Participants were not included in the test in the presence of severe pain, swelling/inflammation or a recent injury or hand surgery in the past six months. Sarcopaenia was defined as handgrip  $<27 \text{ kg}$  for males and  $<16 \text{ kg}$  for females.

**Systemic inflammation:** C-reactive protein (CRP) was used as a biomarker of systemic inflammation, assessed in serum through the N-Latex high-sensitivity CRP mono-

immunoassay (Dade Behring, Illinois, USA) on a Behring Nephelometer II analyser, with a detection limit of 0.17 mg/L and a coefficient of variation <6% [5]. A CRP level of >3 mg/L was considered a mark of inflammation.

**Anaemia:** The blood samples were obtained to measure the biomarkers and stored at -80°C until the completion of analysis. Men with haemoglobin (Hb) < 140 g/L and women with Hb < 120 g/L were termed to have anaemia.

**Disability:** Self-reported limitations in the basic Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) were measured [6]. ADL comprises six activities i.e., getting in or out of bed, eating, dressing, using the toilet, moving around the room, bathing or showering. IADL comprises seven activities: preparation of hot meals, use of Google Maps to get around in a strange place, doing work around the house or garden, taking medications, shopping for household items, managing money and making calls on the telephone. A limitation in one or more of these activities was defined as a disability.

**Smoking status:** Smoking status was determined through interview and participants were classified as former smokers, current smokers or never smokers.

**Physical activity:** Individuals were inquired about their participation in physical activities at three levels: mild (e.g., home repairs, laundry, etc.), moderate (e.g., gardening, cleaning the car, moderate pace walking, etc.) and vigorous (e.g., running or jogging, aerobics or gym workouts, swimming or cycling, etc.). The options included: hardly ever/never, one to three times per month, once per week, more than once per week. Physical activity was further classified into four groups: none (no mild/moderate/vigorous activity per week); mild (no moderate/vigorous activity per week), moderate activity at least once per week; and vigorous activity at least once per week.

**Family and social support:** Social support (used as a dichotomous variable (yes/no)) received from partner/children/friends/relatives was determined through self-reported measurements. Participants who self-reported 'a lot' for three questions ("*How much respondent feels their spouse/partner understands their feelings*"; "*How much respondent can rely on spouse/partner if they have a serious problem*"; "*How much respondent can open up to their spouse/partner if they need to talk*") or 'a lot' for two questions and 'some' for one, were regarded as having positive social support. Subsequently, four network types (partner/children/friends/relatives) were combined. High positive social support was termed as being supported in a minimum of one network type, whereas, low social support was termed as having no support from any type of network.

## References

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