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Aim: For achieving healthy aging for all, multi-faceted frailty is serious problem in super-aged society such as Japan. We developed community-based frailty check-up program performed by trained senior volunteers. In this study, we aimed to validate the ability of the results of check-up to predict needing long-term support or care insurance or death in community-dwelling older population. Methods: A total of 1,536 older adults (mean age, 73.0±6.1 years; 74% women; non-eligible for long-term support or care) participated in the check-ups held from April, 2015 to March, 2018 in Kashiwa City, Japan. At check-ups cite, 21 items including nutrition, oral and physical functions, and social conditions were assessed; Outcome was needing long-term support or care insurance, or death from the day of check-ups until October, 2018. Results: During follow-up {median 678 days (inter-quartile range, 199-1263)}, 116 (7.6%) were newly needing for long-term support (n=50) or care (n=49), or death (n=18). The number of positive responses among 21 items was associated with decreased risks of outcome {age-sex adjusted hazard ratio (95% confidence interval), 0.87 (0.81-0.92)}. Compared those with > 18 positive responses (third tertile), individuals with < 14 positive responses (first tertile) were highly increased risks of outcome {age-sex adjusted hazard ratio (95% confidence interval), 2.44 (1.22-4.49)}. Conclusions: Community-based frailty check-ups program could predict the needing long-term support or care insurance or death in community-dwelling older population. The appropriate intervention for individuals with bad results of the check-up might contribute to serving as early prevention of multi-faceted frailty.

EUROPEAN OLDER ADULTS FRAIL: FINDINGS FROM THE SURVEY OF HEALTH, AGEING AND RETIREMENT IN EUROPE (SHARE)

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Frailty is a geriatric multidimensional syndrome whose signs and symptoms are predictors of increased vulnerability to minor stress events and risk of adverse outcomes such as falls, fractures, hospitalisation, disability and death. In this work, we aimed to update the data of frailty status in European community dwelling population, based on the latest data released (wave 6) of SHARE database, and to study the impact of each criterion on frailty assessment. Frailty status was assessed applying a version of the Fried Phenotype operationalised for SHARE. We included all participants who answered all the questions used in a frailty assessment and who disclosed their gender and, further, whose age was 50 or more. Our final sample was 60816 individuals. Of these, the mean age was 67.45 ± 9.71 years; 38497 (56.4%) were female. The overall prevalence of pre-frailty was 42.9% (ranging from 34.0% in Austria to 52.8% in Estonia) and frailty was 7.7% (ranging from 3.0% in Switzerland to 15.6% in Portugal). Pre-frailty and frailty prevalence increased along age and were more frequent among women. Regarding the five criteria considered on frailty assessment, exhaustion seems to be the criterion that contributes most to frailty status, followed by low activity, weakness, loss of appetite and slowness. With this work, we demonstrated that more than 50% of the 50+ European population are pre-frail/frail, which must be considered when designing interventions to reduce/postpone/mitigate the progression of this condition, reducing the burden associated with it.

ADAMO INDOOR MOBILITY, PHYSICAL FRAILTY, AND AUTONOMY IN OLDER ADULTS: A MEDIATION MODEL

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Physical frailty represents a clinical condition among older adults leading to adverse health outcomes, such as autonomy loss. To evaluate physical frailty in older adults, adopting information and communication technologies (ICT) may be useful. ADAMO (Caretek S.r.l.) is a care-watch accelerometer that allows to measure mobility in a non-intrusive way (Magistro et al., 2018) providing wider information on individual general health (Mulasso et al., in press). The aim of this study was to evaluate the relationship between indoor mobility, physical frailty and autonomy in a sample of Italian older adults. Methods: Thirty-two volunteers (age 65–84 years; women 56.2%) participated in the study. All wore ADAMO care-watch continuously over a 7-day period. The number of steps indoor was the main endpoint. Fragmented daily mobility was estimated. Physical frailty and autonomy were measured using the Tilburg Frailty Indicator (physical components) and the Groningen Activity Restriction Scale, respectively. Results: Significant inverse correlations were observed between number of steps and autonomy, and number of steps and physical frailty. Conversely, a significant direct correlation was observed between physical frailty and autonomy. Additionally, mediation analysis demonstrated full mediation effect of physical frailty between the number of steps and autonomy. Our results imply that high

indoor mobility per se can reduce physical frailty and consequently helps to maintain autonomy. Conclusions: Indoor mobility captured by ADAMO accelerometer may be an important indicator of physical frailty and autonomy. ADAMO may be used as a non-intrusive telemonitoring solution to capture relevant information on individual general health in aged people.

A RANDOMIZED CONTROLLED TRIAL OF METFORMIN FOR FRAILTY PREVENTION: STUDY DESIGN AND BASELINE CHARACTERISTICS

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Inflammation and insulin resistance are major predictors of frailty. Here we describe the study design of an ongoing double-blind, randomized controlled trial of metformin for frailty prevention. Subjects are adults aged 65+ years with pre-diabetes assessed by 2-hour oral glucose tolerance test (OGTT). Those who are frail (Fried criteria) are excluded. Participants are randomized to metformin (maximum dose of 2,000 mg/day) vs. placebo and followed for 2 years. The primary outcome is frailty (category and score); secondary outcomes are physical performance and function (short physical performance battery, 6-minute walk, lower extremity strength), systemic and skeletal muscle tissue inflammation, muscle insulin signaling, insulin sensitivity (insulin clamp), glucose tolerance (OGTT), and body composition (dual-energy x-ray absorptiometry). Safety assessments occur every 3 months; frailty, systemic inflammation, and OGTT are assessed at baseline and every 6 months, and insulin clamp with muscle biopsies are assessed at baseline and every 12 months. To date, 51 subjects have been randomized; 120 completers are planned. Mean age is 73.4 ±5.7 years, 43% are female, and 39% Hispanic. Mean BMI is 30.5 ±5.5 kg/m2, waist circumference is 105 ±13.1 cm, fasting glucose is 102.3 ±8.8 mg/dL, Hemoglobin A1c is 5.8 ±0.3, and glucose at 2 hours during OGTT is 168.5 ±20.4 mg/dL. Metformin is being examined in this study as a potential therapeutic agent to prevent frailty in older adults with pre-diabetes. Findings from this trial may have future implications for the screening and potential treatment of pre-diabetes in older patients with metformin for the prevention of frailty.

HAS FRAILTY SCORE AND FRAILTY LETHALITY CHANGED OVER TIME? HARMONIZATION OF NHANES COHORTS FROM 1999 TO 2016

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Positive advances in life expectancy, healthcare access and medical technology have been accompanied by an increased prevalence of chronic diseases and substantial population ageing. How this impacts changes in both frailty level and subsequent mortality in recent decades are not well understood. We aimed to investigate how these factors changed over an 18-year period. Nine waves of the National Health and Nutrition Examination Survey (1999-2016) were harmonized to create a 46-item frailty index (FI) using self-reported and laboratory-based health deficits. Individuals aged 20+ were included in analyses (n=44086). Mortality was ascertained in December 2015. Weighted multilevel models estimated the effect of cohort on FI score in 10-year age-stratified groups. Cox proportional hazard models estimated if two or four-year mortality risk of frailty changed across the 1999-2012 cohorts. Mean FI score was 0.11±0.10. In the five older age groups (>40 years), later cohorts had higher frailty levels than did earlier cohorts. For example, in people aged 80+, each subsequent cohort had an estimated 0.007 (95%CI: 0.005, 0.009) higher FI score. However, in those aged 20-29, later cohorts had lower frailty [β=-0.0009 (-0.0013, -0.0005)]. Hazard ratios and cohort-frailty interactions indicated that there was no change in two or four-year lethality of FI score over time (i.e. two-year mortality: HR of 1.069 (1.055, 1.084) in 1999-2000 vs 1.061 (1.044, 1.077) in 2011-2012). Higher frailty levels in the most recent years in middle and older aged adults combined with unchanged frailty lethality suggests that the degree of frailty may continue to increase.

DOES GENDER INFLUENCE RISK FOR ORTHOSTATIC HYPOTENSION IN OLDER ADULTS WITH SARCOPENIA?

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Older adults with sarcopenia may be at risk for unstable postural blood pressure due to diminished lean mass that plays a role in maintaining fluid volume. Males have greater lean mass, so risk may be mediated by gender. We compared postural blood pressure changes in older men (77.1 ± 2.0 years; n = 15) and women (79.6 ± 2.0 years; n = 13) with sarcopenia before and after an overnight fast. Sarcopenia was defined using the Lean Mass Index (males ≤ 19.0 kg/m2; females ≤ 15.0 kg/m2). Body composition was measured using multi-frequency bioelectrical impedance, and blood pressure was measured lying, sitting, and standing. On Day 1 (normally hydrated) there were significant drops in systolic blood pressure, with an overall decrease of -9.1 ± 2.2 mmHg ($p < 0.001$) between lying and standing. On Day 2 (overnight fast), postural changes were more profound, with an overall decrease of -14.1 ± 2.8 mmHg ($p < 0.001$). However, when compared by gender, postural changes between lying and standing remained significant but did not differ between men and women (Day 1: men -8.9 ± 2.5 vs. women -9.3 ± 2.5 mmHg; Day 2: men -14.6 ± 4.6 vs. women -13.6 ± 3.1 mmHg). On both days diastolic blood pressure remained stable. In this group of older adults, significant decreases in postural systolic blood pressure were observed in the early morning fasted condition, increasing the risk for orthostatic hypotension (drop in systolic blood pressure -20.0 mmHg). Interestingly, gender did not influence risk.

RACIAL AND ETHNIC DIFFERENCES BETWEEN GRIP STRENGTH AND FUNCTIONAL LIMITATIONS: RESULTS FROM NHATS 2010-2014

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