

Frailty in Older Adults: Evidence for a Phenotype

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ABSTRACT

Background. Frailty is considered highly prevalent in old age and to confer high risk for falls, disability, hospitalization, and mortality. Frailty has been considered synonymous with disability, comorbidity, and other characteristics, but it is recognized that it may have a biologic basis and be a distinct clinical syndrome. A standardized definition has not yet been established.

Methods. To develop and operationalize a phenotype of frailty in older adults and assess concurrent and predictive validity, the study used data from the Cardiovascular Health Study. Participants were 5,317 men and women 65 years and older (4,735 from an original cohort recruited in 1989–90 and 582 from an African American cohort recruited in 1992–93). Both cohorts received almost identical baseline evaluations and 7 and 4 years of follow-up, respectively, with annual examinations and surveillance for outcomes including incident disease, hospitalization, falls, disability, and mortality.

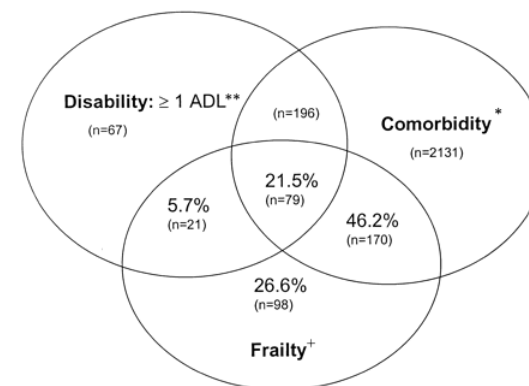
Results. Frailty was defined as a clinical syndrome in which three or more of the following criteria were present: unintentional weight loss (10 lbs in past year), self-reported exhaustion, weakness (grip strength), slow walking speed, and low physical activity. The overall prevalence of frailty in this community-dwelling population was 6.9%; it increased with age and was greater in women than men. Four-year incidence was 7.2%. Frailty was associated with being African American, having lower education and income, poorer health, and having higher rates of comorbid chronic diseases and disability. There was overlap, but not concordance, in the cooccurrence of frailty, comorbidity, and disability. This frailty phenotype was independently predictive (over 3 years) of incident falls, worsening mobility or ADL disability, hospitalization, and death, with hazard ratios ranging from 1.82 to 4.46, unadjusted, and 1.29–2.24, adjusted for a number of health, disease, and social characteristics predictive of 5-year mortality. Intermediate frailty status, as indicated by the presence of one or two criteria, showed intermediate risk of these outcomes as well as increased risk of becoming frail over 3–4 years of follow-up (odds ratios for incident frailty = 4.51 unadjusted and 2.63 adjusted for covariates, compared to those with no frailty criteria at baseline).

Conclusions. This study provides a potential standardized definition for frailty in community-dwelling older adults and offers concurrent and predictive validity for the definition. It also finds that there is an intermediate stage identifying those at high risk of frailty. Finally, it provides evidence that frailty is not synonymous with either comorbidity or disability, but comorbidity is an etiologic risk factor for, and disability is an outcome of, frailty. This provides a potential basis for clinical assessment for those who are frail or at risk, and for future research to develop interventions for frailty based on a standardized ascertainment of frailty.

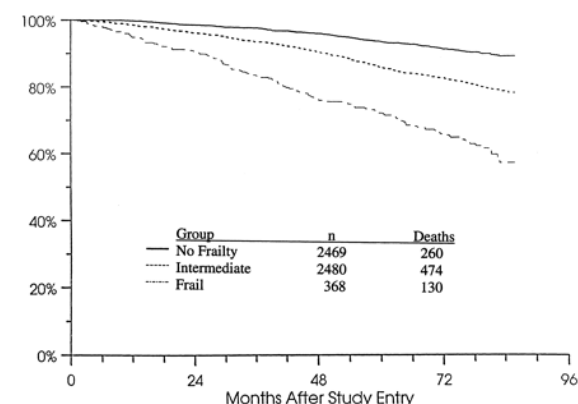


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Venn diagram displaying extent of overlap of frailty with ADL disability and comorbidity (2 diseases). Total represented: 2,762 subjects who had comorbidity and/or disability and/or frailty.



Survival curve estimates (unadjusted) over 72 months of follow-up by frailty status at baseline: Frail (3 or more criteria present); Intermediate (1 or 2 criteria present); Not frail (0 criteria present). (Data are from both cohorts.)