Title: Determinants of Quality of Life in Older Adults with Diabetes: The Diabetes & Aging Study

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BACKGROUND:
Over half of the adults diagnosed with diabetes in the U.S. are ≥ 60 years. The unique needs of older patients with diabetes were formally recognized in 2003 with the publication of the first clinical guidelines for this population by the California Healthcare Foundation and American Geriatrics Society. These guidelines encourage providers to consider the quality of life (QOL) of older patients with diabetes when making treatment recommendations, and to screen for and manage geriatric syndromes. However, the extent to which geriatric syndromes, relative to traditional complications of diabetes, affect QOL is poorly understood.

METHODS:
Eligibility included adults ≥60 years, enrolled in Kaiser Permanente Northern California’s Diabetes Registry, who completed the full version of the Diabetes Study of Northern California (DISTANCE) survey. This survey included a validated QOL assessment, the SF-8™. Physical (PCS) and mental component scores (MCS) (both ranges: 0-100 and means: 50) were used to assess QOL. To estimate the separate effects of prevalent geriatric syndromes [chronic pain, frailty, depression, falls, and urinary incontinence in women (UI)] and traditional complications of diabetes [myocardial infarction (MI), stroke, heart failure (HF), amputation, foot ulcer, neuropathy, end-stage renal disease (ESRD), retinopathy and severe hypoglycemia] on PCS and MCS, we constructed weighted multiple linear regressions models for each syndrome/complication. Each model was adjusted for age, gender, race, marital status, education, income, smoking, alcohol use, physical activity, diabetes medications and duration, and self-monitoring of glucose (e.g. PCS = chronic pain + covariates). To describe the relative strength of association of each of these syndromes/complications, we present the beta coefficients (β) from these models. The change in β indicates the change in PCS or MCS when a geriatric syndrome or traditional complication of disease was present (i.e. chronic pain) or occurs with more frequency (severe hypoglycemia) or worsening severity (e.g. UI).

RESULTS:
Ninety-five percent (n=6,317) of eligible survey respondents, average age 67, completed the SF-8 (PCS and MCS means: 51.2 and 45.0). Dementia was too rare (n=5) to be included. In adjusted models, each geriatric syndromes was associated with lower PCS and MCS: chronic pain (β: -10.0; -2.2), frailty (β: -9.4; -6.2), depression (β: -4.0; -6.5), falls (β: -3.5; -1.6), and UI (β: -1.4; -1.1), as were most traditional complications: MI (β: -2.3; -0.7), stroke (β: -2.2; -1.7), HF (β: -4.1; -1.7), amputation (β: -3.3; -1.6), foot ulcer (β: -2.9; -1.8), neuropathy (β: -1.5; -0.6), ESRD (β: -5.2; -2.3), and severe hypoglycemia (β: -2.4; -1.8). Retinopathy, defined by photocoagulation, proliferative retinopathy, or blindness, was not associated with lower PCS or MCS. All p-values for all reported results were <0.05.

CONCLUSIONS:
Considering all syndromes and complications, the geriatric syndromes, chronic pain, frailty, and depression, were the most predictive conditions of worse quality of life. ESRD and HF were the most predictive traditional complications. While the cross-sectional design precludes causal inferences, this study supports the importance of identifying and prioritizing treatment for geriatric syndromes in the context of diabetes care.