


Physical and Mental Health Differences Reported by Three Age Groups of Older Adults With Diabetes

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Abstract

Most studies have classified older adults with diabetes into one group despite substantial variation in health status across different stages of late adulthood. In this study, we examined difference in self-reported physical and mental health among three age groups of older adults with diabetes. Using data from the 2016 National Social Life, Health and Aging Project, Wave 3, we classified 424 individuals diagnosed with diabetes into three age groups, young-old (YO): 50–64 years; middle-old (MO): 65–74; and oldest old (OO): 75+ years. A one-way multivariate analysis of covariance was used to assess group differences, followed by univariate analyses. The results indicate that the YO group reported significantly lower physical health and higher depression than the MO group and higher levels of loneliness than the MO and OO groups. These findings indicate that physical and mental health may differ among different age groups of older adults with diabetes and suggest that the YO might be more vulnerable to diminished physical and mental health than the other age groups.

Keywords

aging, physical health, depression, loneliness, diabetes

Introduction

About one in four adults over age 60 is diagnosed with diabetes, one of the most prevalent chronic diseases that negatively affects older adults, and the number is estimated to reach over 552 million by 2030 (Whiting et al., 2011). Older adults with diabetes are more vulnerable than non-diabetic counterparts because they not only experience various geriatric symptoms (e.g., activity limitation, depression, and cognitive decline) (American Diabetes Association, 2018) but also lose resilience to rebound from frail health status (Dent et al., 2020). They tend to experience higher mortality, reduced functional abilities, and increased metabolic comorbidity related to diabetic symptoms (Dalsgaard et al., 2014). Prior studies indicate substantial variation in the health status of aging individuals because of chronological, biological, and psycho-social differences in the aging process (Liu et al., 2020; Yang et al., 2020). Most previous findings have focused on investigating health conditions and health status at fixed points in time (Jeste et al., 2013; Montross et al., 2006), rather than considering the effects of varied stages of aging on health among older adults.

However, such an approach is challenged by Diener and Chan's (2011) finding that individuals aged 75 years and over rated their health status more positively than people aged 65–74 years. Thus, the stage of aging of an older adult with diabetes can be an important factor influencing their physical and mental health (Dalsgaard et al., 2014).

Despite evidence of differences in health status among older adults with diabetes at different age stages, only a few studies have examined how age differences affect the physical and mental health of older adults with diabetes. Thus, we adopted the age categorization suggested by previous studies (Hunsaker & Hargittai, 2020; López et al., 2020): young-old (YO, 50–64), middle-old (MO, 65–74), and oldest old (OO,

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75+) for comparison of health status across age groups. The aim of this study was to compare self-perceptions of physical health, depression, and loneliness among these three groups of older adults with diabetes.

Methods

Data Source

We utilized the National Social Life, Health and Aging Project Wave 3 (2016) panel dataset, which includes broad information such as self-rated physical and mental health, diseases, psychological status, and participation in various kinds of leisure activities among the older adults in the United States. From this dataset, our sample of interests consisted of a subset of 424 respondents who were diagnosed with diabetes and included self-rated physical health, depression, and loneliness.

Variable Measurement

Fixed Variable

Age. To generate similar proportions among the three age groups, similar to those in the general population of older adults, we implemented frequency analysis. Respondents were categorized as YO ($N = 181$, 42.7%), MO ($N = 192$, 45.3%), and OO ($N = 51$, 12.0%).

Dependent Variables

Physical Health. Physical health was measured by one item on which participants self-rated their general physical health on a five-point scale: “Would you say your health is excellent, very good, good, fair, or poor?” This single-item measurement has been widely applied to gerontology studies (Assari, 2016; Idler & Cartwright, 2018). Higher score indicates better perceived physical health.

Depression. Depression was assessed by an eight-item version of the Center for Epidemiologic Studies Depression (CES-D) Scale. This CES-D scale has been used in multiple health studies (Briggs et al., 2018; Burisch, 1997), and its validity has been justified through cross-validation assessment (Burisch, 1997). The eight items refer to “appetite,” “feeling depressed,” “effort,” “sleep,” “unfriendliness,” “sadness,” “feeling disliked,” and “getting going,” rated on a four-point scale. For instance, the item for “feeling depressed” was “During the past week, I felt depressed.” The items were rated on a four-point scale (0 = “rarely or none of time,” 1 = “some of the time,” 2 = “occasionally,” and 3 = “most of the time”), and higher scores indicated more severe depression.

Loneliness. To measure level of loneliness, a short version of the University of California, Los Angeles (UCLA) Loneliness Scale (Version.3), comprising three items, was used. The items were related to “companionship,” “feeling left

out,” and “feeling isolated.” For instance, the item for “feeling depressed” was “During the past week, I felt depressed,” for which 0 = “Rarely or none of time,” 1 = “Some of the time,” 2 = “Occasionally,” and 3 = “Most of the time,” with higher scores indicating more severe depression.

Covariance, Gender, and Marital Status. Gender and marital status were included as covariates to control for gender and marital status. Demographic factors (i.e., age, gender, and marital status) have skewed results in investigations of both physical and mental health among older adults with chronic diseases (Marventano et al., 2014; Williams et al., 2017). For example, females tend to report worse health status and have longer life expectancy than males, even among older adults (Loke et al., 2015).

Data Analysis

The Statistical Package for the Social Science (SPSS 25.0) was used for analysis. A multivariate analysis of covariance ($\alpha = .5$) was conducted to investigate mean differences in the dependent variables, physical health, depression, and loneliness, between levels of the fixed variable, age, controlling for covariates, gender and marital status.

Results

The effect of the gender covariate was significant for depression ($F = 5.63$, $p < .01$, $\eta^2 = .01$) and marital status was significant for loneliness ($F = 17.65$, $p < .01$, $\eta^2 = .04$). Multivariate controlled analyses of the three dependent variables revealed a significant effect of age group for physical health ($F = 5.12$, $p < .01$, $\eta^2 = .02$), depression ($F = 5.97$, $p < .01$, $\eta^2 = .03$), and loneliness ($F = 6.41$, $p < .01$, $\eta^2 = .03$).

Group Differences

A Bonferroni post-hoc test was used to assess differences among the three age groups (Table 1). The YO group showed significantly lower physical health and higher depression than the MO group ($MD = -.31$, $SE = .10$, $p < .05$, $MD = 1.42$, $SD = .45$, $p < .05$). In addition, the YO group reported higher loneliness than the MO and OO groups ($MD = .49$, $SE = .20$, $p < .05$, $MD = 1.04$, $SE = .31$, $p < .05$).

Discussion

This study revealed significant differences in self-perceived physical and mental health (depression and loneliness) among three age groups of older adults with diabetes. Notably, the YO group’s scores on depression and loneliness were significantly higher than those of the MO and OO groups, and their scores on physical health were significantly lower than those of the MO group, suggesting that overall, the YO group experienced the lowest levels of physical and mental health among the three groups of older adults with diabetes.

Table 1. Post-Hoc Test for Group Means of Age Group.

Dependent Variable	Age (I) (Adjusted Mean)	Age (J) (Adjusted Mean)	Mean Difference (I-J)	Sig	Bonferroni Post-hoc
Physical health	Young-old (2.64)	Mid-old (2.95)	-.31*	.00*	Old > young-old
		Old-old (2.63)	.01	1.00	
Depression	Young-old (14.52)	Mid-old	.32	.14	Young-old > old
		Mid-old (13.09)	1.42*	.00*	
		Old-old (12.92)	1.59	.06	
Loneliness	Young-old (4.21)	Mid-old	.18	1.00	Young-old > old Young-old > old-old
		Mid-old (3.72)	.49*	.04*	
		Old-old (3.17)	1.04*	.00*	
	Mid-old	Old-old	.54	.25	

Note. Bonferroni post-hoc test.

* $p < .05$

Their results have practical implications for gerontology practitioners. First, [Gonzalez et al., \(2007\)](#) provided evidence that people with diabetes aged 50–60 years can be at risk of developing depression, loneliness, and perceptions of low physical health, which can lead to unhealthy behaviors. They suggested that gerontology practitioners consider designing and implementing mental health and physical activity programs tailored to the needs and expectations of 50- to 64-year-old clients with diabetes. Additionally, recent studies stress the importance of choosing appropriate types and intensity levels of physical activity based on the mental health of older adults with diabetes ([Han et al., 2021](#); [Lee et al., 2021](#)). Thus, gerontology practitioners need to design or adopt individual- and group-appropriate levels and types of physical activity programs for older adults with diabetes, especially those aged 50–64, who may be at risk for poorer perceived physical and mental health.

Some limitations of this study may be addressed in future studies. First, an individual's functional ability, comorbidities, age at diagnosis, and time since diagnosis were not included in the analyzed dataset but may affect physical and mental health. We suggest future researchers investigate how these variables affect the health of older adults with diabetes. Nevertheless, this study has provided important evidence of differences in physical health, depression, and loneliness between three age groups, suggesting that age group should be considered in the context of therapeutic treatment and program design.

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Author Contributions

First author (Jungjoo Lee) proposed the research framework. He conducted dataset analysis and wrote down the manuscript from introduction to method and result part. Second author (Junghyung

Kim) took abstract and discussion parts. Third author (Richard Holden) supervised the whole string of the research.

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Ethical Approval

All the research meets the ethical guidelines, including adherence to the legal requirements of the study country.

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