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Associations of Social Support and Self-Efficacy with Quality of Life in a Sample of Older Adults with Diabetes

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Abstract

Older adults are disproportionately affected by diabetes, which is associated with increased prevalence of cardiovascular disease, decreased quality of life (QOL), and increased healthcare costs. The purpose of this study was to assess the relationships between social support, self-efficacy, and QOL in a sample of 187 older African Americans (AA) and Caucasians with diabetes. Greater satisfaction with social support related to diabetes, but not the amount of support received, was significantly correlated with QOL. In addition, persons with higher self-efficacy in managing diabetes had better QOL. In a covariate-adjusted regression model, self-efficacy remained a significant predictor of QOL. Findings suggest the potential importance of incorporating the self-efficacy concept within diabetes management and treatment in order to empower older adults living with diabetes to adhere to care. Further research is needed to determine whether improving self-efficacy among vulnerable older adult populations may positively influence QOL.

Keywords

Diabetes; older adults; quality of life; self-efficacy; social support

Introduction

In 2010, approximately 10.9 million (26.9%) older adults had diabetes and by 2050, this number is projected to increase to 26.7 million (55%) (Caspersen, Thomas, Boseman, Beckles, & Albright, 2012; Centers for Disease Control and Prevention, 2011). Diabetes is a chronic metabolic condition that requires a multifaceted approach to manage the costly burden which accompanies this disease. In addition, diabetes is a significant healthcare issue that cost the United States approximately \$245 billion dollars in 2012, which was an increase of 41% from just five years earlier (American Diabetes Association, 2013).

Diabetes in older adults is a growing, public health problem. Increased life expectancy along with the growing population will likely increase the healthcare burden of managing chronic conditions like diabetes among older adults (U.S. Department of Health & Human Services, 2010).

Diabetes is associated with several comorbidities (e.g., diabetic retinopathy, neuropathy, and nephropathy), and an overwhelming majority of research studies report a strong association between diabetes and cardiovascular disease (i.e., heart disease and stroke). Adults with diabetes are up to four times more likely to have heart disease or a stroke compared to individuals without diabetes; in turn, heart disease and stroke are the top causes of death in people with diabetes (Centers for Disease Control and Prevention, 2011) and older adults with diabetes show overall increased mortality rates. The combination of diabetes and other comorbid conditions would presumably heighten the medical complexity for older people and make care for them particularly challenging. More importantly, the heterogeneity of chronic diseases that are associated with diabetes can translate to decreased life expectancy and quality of life (QOL) for older adults.

QOL is an intricate, multidimensional, subjective appraisal of an individual's existing life circumstances and satisfaction as it relates to a person's well-being, culture, values, and psychosocial and spiritual dimensions (Haas, 1999; Hardin, 2010). Moreover, QOL is a nonspecific label that encompasses contentment with the physical and psychosocial elements of an individual's health, which may be especially important among older adults with diabetes. One of the Healthy People 2020 goals is to improve health-related QOL as evidenced by more individuals self-reporting better physical and mental health (U.S. Department of Health & Human Services, 2013). To ensure that older adults have the chance to achieve and maintain a good QOL, the healthcare community must understand the role that social support and self-efficacy play in a person's well-being. For example, Beverly and colleagues found that older adults positively benefited from diabetes behavioral interventions that included psychosocial factors such as QOL, diabetes distress, and self-efficacy (Beverly et al., 2013). Using these types of strategies may be helpful to improving QOL perceptions among older adults.

Quality of Life and Social Support

Social support encompasses the self-appraisal of real or perceived social networks of family, friends, and organizations, which will provide emotional, financial, or personal assistance when needed (Debnam, Holt, Clark, Roth, & Southward, 2012; Eaker, 2005; *Gallant, 2003*; Tang, Brown, Funnell, & Anderson, 2008). In addition, social support is an essential component for the adoption and maintenance of self-care measures in diabetes management (Coffman, 2008; Strom & Egede, 2012); therefore, it is essential to examine the interplay between social support, physical health, and QOL (Uchino, 2009). Older adults who have or perceive themselves to have a good social network are more likely to show better health outcomes (Uchino, 2009), which is particularly important in predicting the adoption of healthy behaviors to manage chronic diseases, such as diabetes (Tang et al., 2008). Because social support is a multifaceted concept that is essential for disease management, it is

important to know how satisfied older adults are with the type and amount of social support they receive.

Tang and colleagues (2008) investigated four social support variables among 89 AA adults diagnosed with diabetes, which included the amount and satisfaction of diabetes-related support received as well as positive and negative support behaviors. They found that diabetes support satisfaction was associated with improved QOL and glucose monitoring; positive support predicted adhering to a healthy diet and regular physical activity; whereas negative support predicted noncompliance with medications. These findings suggest that diabetes-related social support has an important role in improving QOL and self-management behaviors among people with diabetes.

Similarly, Strom and Egede examined information on clinical outcomes, behavioral modification, psychological factors, and social support preferences and concluded that increased levels of social support will likely yield improved health-related decision making, adoption of healthy lifestyles behaviors to manage chronic diseases, and more positive health outcomes (Strom & Egede, 2012). Regarding satisfaction with social support for disease management, the amount of satisfaction one perceives depends on the relationship between the giver and the receiver of the support provided (Nicklett, Heisler, Spencer, & Rosland, 2013). Results suggest that the more support satisfaction a person with diabetes experiences, the more likely this support will protect against diabetes burden (Baek, Tanenbaum, & Gonzalez, 2014).

Self-Efficacy among Older Adults with Diabetes

Achieving good glycemic control for the older adult living with diabetes requires successful daily management of blood glucose and appropriate levels of self-efficacy to manage the disease (Beckerle & Lavin, 2013). Higher levels of self-efficacy among older adults with diabetes are associated with self-motivation, self-empowerment, and self-confidence about their abilities to influence disease outcomes. Previous study findings have reported a positive association between self-efficacy and diabetes self-care management (Naccashian, 2014; Song, Ahn, & Oh, 2013), and between self-efficacy and hemoglobin A1C levels (Richardson, Derouin, Vorderstrasse, Hipkens, & Thompson, 2014). Richardson and colleagues (2014) examined self-efficacy screening scores before and after implementation of a self-efficacy intervention to investigate pre and post hemoglobin A1C levels in adults (mean age 58 years) with diabetes. In this study, there were significant improvements in patients' hemoglobin A1C levels and self-efficacy scores after the intervention. In another study, Huffman and colleagues examined the association of diabetes, self-efficacy, and physical activity among older adults (average age of 78) with arthritis (Huffman et al., 2010). Using validated measures of self-efficacy (McAuley, 1993), the participant data were dichotomized as having high or low self-efficacy. Findings revealed that among older adults with both diabetes and arthritis, lower self-efficacy was associated with limited physical activity (e.g., endurance training); higher levels of self-efficacy were reported in older adults with arthritis alone.

Several studies have examined the relationship between both social support (Condrasky, Baruth, Wilcox, & Carter, 2013; Shaya et al., 2013; Utz et al., 2008; Watkins, Quinn,

Ruggiero, Quinn, & Choi, 2013) and self-efficacy (Al Sayah, Majumdar, Egede, & Johnson, 2015; Kim, Shim, Ford, & Baker, 2015; Peek et al., 2012; Peyrot et al., 2014; Steinhardt, Mamerow, Brown, & Jolly, 2009) and diabetes related outcomes. However, few studies have examined the relationship between social support and self-efficacy among AAs with diabetes (Heisler & Piette, 2005; Hunt, Grant, & Pritchard, 2012; Klug, Toobert, & Fogerty, 2008; Lorig, Ritter, Villa, & Armas, 2009). For example, Klug and colleagues found a positive association between social support and self-efficacy among people with diabetes; however, only 1% of the sample was AA. Similarly, Lorig and colleagues reported a positive link between social support and self-efficacy in a sample that was 70% non-Hispanic Whites with diabetes and there was no indication of the number of AA participants. However, 60% of the participants with diabetes in Hunt and colleagues' study were AA and they found a positive association between social support and self-efficacy. More research that examines the importance of social support and self-efficacy for diabetes related outcomes in AAs (Chlebowy & Garvin, 2006; Komar-Samardzija, Braun, Keithley, & Quinn, 2012) is needed to aid in the development of interventions targeted to improve overall QOL across diverse populations.

The purpose of the current study was to examine the associations between social support, self-efficacy, and QOL variables in a sample of older adults with diabetes. Based on previous literature, it was hypothesized that (1) higher levels of social support would be associated with better QOL and (2) higher levels of self-efficacy would be associated with better QOL (Bond, Burr, Wolf, & Feldt, 2010; Shen, Edwards, Courtney, McDowell, & Wu, 2012). In one prior study, researchers examined the relationship between social support, self-efficacy, and outcome expectations (glucose control and self-care) among 27 AA and 64 White adults with type2 diabetes. Results suggest that AAs were more likely than Whites to experience diabetes complications or distress when social support satisfaction is limited and the impact of self-efficacy was unclear (Chlebowy & Garvin, 2006). The current investigation adds to the literature by informing healthcare providers of potential factors that may increase diabetes self-efficacy among this population.

METHODS

Procedures

Data from the University of Alabama at Birmingham (UAB) Diabetes and Aging Study (DASH) were analyzed for this study. The overall aim of the UAB DASH was to examine racial differences in older AAs and Caucasians with diabetes (Jones, Clay, Ovalle, Cherrington & Crowe, 2015). Participants included community-dwelling older adults from Birmingham, Alabama and surrounding areas as well as patients from a diabetes clinic at UAB. All participants were age 65 and older and had diabetes identified either by self-report or physician diagnosis. Community-dwelling participants were recruited from a commercially available list of older adults in the Birmingham metropolitan area that is maintained by the UAB Roybal Center for Translational Research on Aging and Mobility Clinic participants were recruited from patients of one physician at the UAB Diabetes & Endocrinology Clinic. All participants were contacted via a mailed letter followed by telephone contact. AAs were oversampled because the overarching goal of the study was to

examine racial disparities in mental health, cognitive function, and mobility outcomes in older adults with diabetes.

Participants provided verbal informed consent and completed telephone interviews focused on diabetes-specific measures of health and psychosocial factors as well as performance-based cognitive testing. A total of 247 individuals (72% community-dwelling, 28% clinic patients) were enrolled at baseline. Ten individuals from the UAB DASH identified as racial categories other than AA and Caucasian). Participants were assigned identification numbers and all identifying data were stored in locked file cabinets in locked offices in a separate building from storage of other data. All electronic data were stored on a password protected server. The UAB Institutional Review Board reviewed and approved this study. Data from a one-year follow-up telephone interview were utilized for this investigation, since QOL data were not collected at baseline. A sample of 187 AA and Caucasian participants out of a possible 237 (79%) were retained at the one-year assessment and provided complete data on the variables of interest.

Demographics

Age and education were reported in years. Race was coded as AA = 1 and Caucasian = 0 and gender was coded as female = 1 and male = 0.

Social Support

Amount of social support was assessed by asking participants, "How much support do you get dealing with your diabetes?". Response options ranged from "no support" (1) to "a great deal of support" (5). Satisfaction with social support was assessed by asking participants, "How satisfied are you with the support you get for dealing with your diabetes?". Response options ranged from "not at all satisfied" (1) to "extremely satisfied" (5). Higher scores on these items reflect more support. These diabetes-specific support questions have been previously used (Tang et al., 2008). Tang and colleagues (2008) found that greater satisfaction with support was significantly associated with better diabetes-specific quality of life and blood glucose monitoring. It is notable that this single-item satisfaction question was more highly related to quality of life and glucose monitoring than support measures from the widely used 16-item Diabetes Family Behavior Checklist (Glasgow & Toobert, 1988).

Quality of Life

QOL was assessed using the EQ-5D, a standardized measure that has been widely applied to measure the impact of diabetes on QOL (Janssen, Lubetkin, Sekhobo, & Pickard, 2011). This 5-item measure is a summary score of an individual's health-related QOL in 5 domains (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression). It has a possible range of 5 to 15, and we reverse-scored this measure so that higher scores indicated better QOL. Internal consistency assessed by Cronbach's alpha for the scale was 0.72 within the current sample of older adults with diabetes.

Diabetes Self-Efficacy

The Perceived Diabetes Self-Management Scale (PDSMS) was used to measure self-efficacy (Wallston, Rothman, & Cherrington, 2007). There are eight items for the PDSMS and responses range from 1 (strongly disagree) to 5 (strongly agree). Four of the items are reverse scored before summing to obtain scores that can range from 8 to 40, where higher scores indicate more confidence in diabetes management. Cronbach's alpha was 0.86 in the current sample, slightly higher than the previously reported internal consistency (Wallston et al., 2007).

Analyses

All analyses were conducted using SAS V9.1.3 (SAS Institute Inc., 2006). Frequencies and means were computed to examine sample descriptive statistics. Pearson's product-moment correlations were computed to examine bivariate associations between study variables. Finally, a multiple linear regression model was used to assess the covariate-adjusted associations between variables of interest and QOL.

RESULTS

Participant Characteristics

Descriptive statistics for older adults with diabetes in the sample are presented in Table 1. There were 187 individuals who completed the one-year telephone assessment and provided complete data for variables of interest. Approximately half the participants were AA and nearly half were female. The mean age of the participants was 74 years old. The average QOL score as assessed by the EQ-5D was 12.93 (SD=1.70). Amount of social support had a mean score of 3.54 (SD=1.57) and the mean for satisfaction with social support was 4.41 (SD=0.93). Finally, the average self-efficacy score was approximately 32. This was also the score that occurred most frequently within the sample (25% of participants scored 32 out of 40 on the PDSMS).

Bivariate Correlations

Associations between study variables are listed in Table 2. Female gender was associated with worse QOL ($p < .05$). Higher levels of education, greater satisfaction with social support, and greater self-efficacy were all related to better QOL ($p < .05$). The largest correlation was observed between QOL and self-efficacy ($r = 0.416$, $p < .0001$). QOL was not significantly associated with age, race or amount of social support. There were moderate associations between satisfaction with social support and amount of social support ($r = 0.371$, $p < .0001$), as well as between satisfaction with social support and self-efficacy ($r = 0.413$, $p < .0001$).

Covariate-adjusted Model Predicting QOL

Results from the multiple linear regression model predicting QOL scores are presented in Table 3. Due to the moderate association between the social support measures and the lack of a significant association between amount of support and QOL, amount of support was not included in the regression model to reduce multicollinearity. All demographic measures

were retained for the covariate-adjusted model, therefore age, gender, education, race, satisfaction with social support, and self-efficacy were examined as predictors of QOL. The only variable that had a significant covariate-adjusted relationship with QOL score was self-efficacy ($B = -.376, p < .0001$). Again, individuals with more self-efficacy dealing with their diabetes had better QOL.

DISCUSSION

We examined relationships between social support, self-efficacy, and QOL in a sample of older adults. Specifically, this study offers insights on how potentially modifiable factors are associated with QOL in older people with diabetes. Overall, our unadjusted results revealed the strongest correlations between QOL and diabetes-specific social support and self-efficacy measures, although demographic factors such as female gender and less education were associated with lower QOL.

Consistent with our first hypothesis, higher level of satisfaction with diabetes-related social support was associated with better QOL. This finding is consistent with prior research, which indicates the positive role social support plays in managing chronic diseases such as diabetes (Coffman, 2008; Tang et al., 2008; Thoits, 1995, 2011). While satisfaction with social support and amount of social support a person received were significantly and positively related to each other, being satisfied with diabetes-related social support was more important than amount of social support received in terms of QOL. These findings are generally consistent with existing studies that suggest better social support may positively influence disease management burden and QOL (Gallant, 2003; Gallant, Spitze, & Prohaska, 2007; Nicklett et al., 2013; Tang et al., 2008; Wang & Fenske, 1996).

In relation to the second hypothesis, our study supports a relationship between QOL and self-efficacy. These findings propose that persons with higher self-efficacy dealing with their diabetes had better QOL, and findings are consistent with prior research on the potential influence of self-efficacy on QOL (Shahab-Jahanlou & Alishan-Karami, 2011; Song et al., 2013). Because our measure of self-efficacy involves the perception of one's ability to effectively manage diabetes, strategies specifically to improve confidence in managing diabetes may be useful for improving QOL in this population. Consistent with previous research, incorporating the concept of self-efficacy when instructing older adults about diabetes care and management could increase the probability of this group adhering to treatment and having a higher QOL perception (Hurley & Shea, 1992; Liu, 2012; Mishali, Omer, & Heymann, 2011).

Limitations

Given that the results are based on data exclusively from older adults from one southern state, this limits generalizability to other regions, minority groups, and people younger than 65. This study also relied on self-reported data to assess perceptions of received amounts of social support, which is subject to recall bias. Some individuals may want to present themselves in the best manner possible. Therefore, over-reporting satisfaction and QOL may be an issue (Polit & Beck, 2008). Finally, we are not able to draw causal inferences for associations with QOL since this analysis relied on cross-sectional, observational data.

Clinical Implications

The findings from this study can be used by the healthcare community to help identify older adults with diabetes who may be at-risk for poor QOL. For example, healthcare professionals could screen older adults with diabetes for low self-confidence related to managing their condition. Additionally, making sure older adults with diabetes receive adequate social support may lead to improved QOL for this population, although further experimental research is needed.

Due to the high prevalence of diabetes among older adults and the substantial economic burden on patients and society, it is imperative that healthcare providers, along with policymakers, develop and implement strategies targeted to improve self-efficacy and social support that could potentially lead to improvements in QOL. For example, Beverly and colleagues investigated whether adults aged 60-75 years old compared to their younger counterparts would benefit more from a group diabetes education class versus individual classes. They found that older adults with diabetes who participated in group diabetes self-management interventions achieved better psychosocial (QOL, distress, self-efficacy, and coping) outcomes and glycemic control (Beverly et al., 2013). The group format allowed participants to react and to be stimulated by others viewpoints, thus using this method may increase self-efficacy and social support (Carey & Forsyth, 2015). Therefore, healthcare providers and policymakers could increase usage of group intervention strategies to increase self-efficacy and social support among older adults with diabetes. In another study, Coffman and colleagues evaluated the relationships between depression, social support, and self-efficacy among a sample of 115 older Hispanic adults with self-reported type 2 diabetes (Coffman, 2008). They found that the majority of the participants' needed support was in the form of transportation; family was the major source of support (46.4%), followed by government-sponsored social programs (28%), and medical professionals (17.6%). Interestingly, a negative but significant relationship between support and self-efficacy was identified; which indicated that the more support a person needed, the lower their level of self-efficacy (Coffman, 2008). Overall, results support the idea that improving self-efficacy in this population may potentially improve both quantity and QOL (Coffman, 2008).

Conclusions

Healthcare providers and policymakers are positioned to ensure that older adults with diabetes have an optimal chance of achieving a good QOL. Information gained from this study may be instrumental in developing strategies to increase diabetes self-efficacy, social support, and overall QOL among older adults. Future studies should consider healthcare provider knowledge of the self-efficacy concept when providing education to older adults with diabetes and whether improvements in self-efficacy are associated with better self-management of diabetes. Having this information would assist healthcare providers in engaging policymakers to develop policies that help empower older adults living with diabetes to successfully manage this chronic condition and reduce complications.

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Table 1

Descriptive Statistics (n = 187)

Measures	Mean (SD)	Sample Range	N (%)
Age	74.61 (5.99)	66 – 91	
Female gender			98 (52.41)
Education	13.68 (2.64)	2 – 20	
African American Race			91 (48.66)
Social Support			
Amount	3.54 (1.57)	1 - 5	
Satisfaction	4.41 (0.93)	1 - 5	
Self-Efficacy	31.75 (4.87)	17 - 40	
QOL	12.93 (1.70)	8 - 15	

Note: QOL=quality of life

Table 2

Correlation matrix of study variables

	Age	Female Gender	Education	AA race	Amount of Support	Satisfaction with Support	Self-efficacy	QOL
Age	1.00							
Female Gender	0.175 .0165	1.00						
Education	0.086 .2425	-0.122 0.0959	1.00					
AA race	-0.127 .0835	.2209 .0024	-0.208 .0043	1.00				
Amount of Support	-0.032 .6677	-0.034 .6476	-0.023 .7502	-0.045 .8422	1.00			
Satisfaction with Support	-0.076 .3018	-0.027 0.7107	0.060 .4149	-0.075 .3076	0.371 <.0001	1.00		
Self-efficacy	0.095 .1961	-0.207 .0044	0.206 .0047	-0.147 .0449	0.053 .4691	0.413 <.0001	1.00	
QOL	-0.032 .6669	-0.147 .0452	0.187 .0105	-0.112 .1281	-0.018 .8061	0.230 .0053	0.416 <.0001	1.00

Note: AA = African American; QOL= quality of life

Table 3

Covariate-adjusted relationships between variables of interest and QOL

Measure	Standardized beta (B)	Unstandardized beta (b)	Standard Error	t-statistic	p-value
Intercept	0.000	9.239	1.713	5.39	<.0001
Age	−0.072	−0.020	0.020	−1.02	.3088
Female gender	−0.035	−0.119	0.245	−0.49	.6267
Education	0.102	0.066	0.045	1.46	.1453
African American race	−0.034	−0.115	0.240	−0.48	.6317
Satisfaction with social support	0.033	0.060	0.137	0.44	.6630
Self-efficacy	0.376	0.131	0.027	4.85	<.0001

Note: QOL=quality of life