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Meaning of illness and quality of life in patients with type 2 diabetes

Rebekah J. Walker [a,b], Cheryl P. Lynch [a,b,c], Joni Strom Williams [b,c], Delia Voronca [b,c], Leonard E. Egede [a,b,c,*]

[a] Health Equity and Rural Outreach Innovation Center (HEROIC), Ralph H. Johnson Veterans Affairs Medical Center, Charleston, SC
[b] Center for Health Disparities Research, Department of Medicine, Medical University of South Carolina, Charleston, SC
[c] Department of Medicine, Division of General Internal Medicine and Geriatrics, Medical University of South Carolina, Charleston, SC

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ABSTRACT

Background: Investigations into personal factors influencing quality of life are important for those developing strategies to support patients with diabetes. This study aimed to investigate the influence of meaning of illness on quality of life in patients with type 2 diabetes.
Methods: Veterans from primary care clinics in the southeastern United States completed a questionnaire including questions from the validated 5-scale Meaning of Illness Questionnaire (MIQ). Unadjusted and adjusted linear regression models investigated the physical and mental components of quality of life with the 5 MIQ factors.
Results: The sample comprised 302 Black and White veterans. The physical component of quality of life (PCS) was positively associated with type of stress/attitude of harm ($\beta = 2.43$, CI: 0.94 to 3.93) and challenge/motivation/hope ($\beta = 3.02$, CI: 0.40 to 5.64) after adjustment, whereas the mental component of quality of life (MCS) was positively associated with the degree of stress/change in commitment ($\beta = 2.58$, CI: 0.78 to 4.38), and negatively associated with challenge/motivation/hope ($\beta = -2.55$, CI: -4.99 to -0.11).
Conclusion: Attitudes of challenge, motivation and hope had opposite effects on mental and physical components of quality of life in this sample of veterans. Additionally, whereas, the type of stress and attitude towards harm or loss was associated with the physical component, the degree of stress and change in commitments was associated with the mental component. This suggests addressing the meaning of an illness may be complex but is an important consideration in improving both physical and mental components of quality of life in patients with type 2 diabetes.
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The financial, physical, and psychological impacts on those diagnosed with diabetes are evident and well-studied. Medical expenditures are 2.3 times higher than those without diabetes, with an increased risk for eye, nerve, kidney and cardiovascular complications, two times higher likelihood of depression and increased risk for serious psychological distress (Centers for Disease Control and Prevention, 2014; Egede & Dismuke, 2012; Egede & Ellis, 2010). Depressive symptoms, which are twice as likely in patients with type 2 diabetes, are associated with markedly lower quality of life (Egede & Ellis, 2010). In addition, most studies report worse quality of life for individuals with diabetes when compared to the general population (Rubin & Peyrot, 1999). Investigations into more personal factors influencing this decreased quality of life are important for those developing strategies to support patients with diabetes.

One personal factor for lower quality of life among those diagnosed with diabetes is the meaning attributed to their illness. This topic has been discussed in the coping literature, but is considered separate because it includes both the psychological symptoms that result from a stressful diagnosis, and the coping processes that follows (Lazarus & Folkman, 1984). Meaning of illness has been defined as "the cognitive and behavioral effort to manage specific external or internal demands that are appraised as taxing or exceeding one's resources (Lazarus & Folkman, 1984)." The diagnosis of diabetes, as well as the lived experience of its consequences (such as symptoms of high or low blood sugar, behavioral adjustments like timing medications and more control of diet and activity, or increased need for social support) requires significant cognitive appraisal (Mathew, Gucciardi, De Melo, & Barata, 2012; Olshansky, Sacco, Fitzgerald, et al., 2008). Studies have found that the appraisal, or meaning a person associates with a stressful event, such as diagnosis of an illness, explains more of a person's adjustment to illness than items measuring coping behaviors (Browne, Byrne, Roberts, et al., 1988; Weir, Browne, Roberts, Tunks, & Gafni, 1994).

While qualitative work has been done providing information on the types of meanings attributed to diabetes (Hörnsten et al., 2004; Paterson, Thorne, & Russell, 2002), few studies have quantitatively investigated the meaning of illness in diabetes and demonstrate its

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* Corresponding author at: Health Equity and Rural Outreach Innovation Center, Center for Health Disparities Research, Medical University of South Carolina, 135 Rutledge Avenue, Room 280G, P.O. Box 250593, Charleston, SC 29425-0593. Tel.: +1 843 876 1238; fax: +1 843 876 1201.
E-mail address: egedel@musc.edu (L.E. Egede).

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effect on outcomes. Questionnaires measuring the meaning of illness ask multiple questions intended to elicit concurrent but independent meanings that can be attributed to an illness (Browne et al., 1988; Weir et al., 1994). For example, questions ask about the impact of living with diabetes on relationships, jobs, and leisure, the type and degree of stress caused by the illness and its complications, and the satisfaction with a person's level of energy, outlook on the illness, and how the illness is handled (Browne et al., 1988; Weir et al., 1994). A study on the influence of diabetes in patients with type 1 diabetes found that lower HbA1c levels were associated with a more positive meaning, with the impact of an illness and degree of stress influencing both physical and mental health measures (McFarland, Rhoades, Campbell, & Finch, 2001). An important suggestion of their work was that repeated emphasis on the complications of diabetes may serve to increase stress and create a more negative meaning of illness for patients (McFarland et al., 2001). A study on the perceptions of diabetes stratified by race and socioeconomic status suggested that there may be differences by race, including African Americans seeing diabetes as more disabling and disfiguring (Ford, Havstad, Brooks, & Tilley, 2002). As the understanding of an illness can change over time and be influenced by an individual's environment and sociodemographics, it is important to gather more information on this important personal understanding of diabetes (Paterson et al., 2002).

This study aimed to investigate the influence of meaning of illness on quality of life in patients with type 2 diabetes. The Meaning of Illness Questionnaire (MIQ) was used and allowed analysis of the 5 separate subscales (Browne et al., 1988; Weir et al., 1994) and investigation into the association of different appraisals to physical and mental health-related quality of life.

1. Methods

1.1. Sample population

The sample population was recruited from primary care clinics at a Veterans Affairs Medical Center in the southeastern United States in 2004. Participants were eligible if they were 18 years of age and older, their medical record indicated a diagnosis of type 2 diabetes, they were not cognitively impaired and were English speaking. Equal numbers of Whites and African Americans were recruited. Eligible participants received an invitation through the mail and were given a description of the project prior to consent. After being consented, patients completed a questionnaire regarding diabetes knowledge, beliefs and attitudes, trust in physicians and medical centers, psychosocial moderators of care, and diabetes self-management. All study procedures were approved by the local institutional review board and VA R&D committee.

1.2. Outcomes

Physical and mental aspects of quality of life (QOL) were assessed using the Veteran Short-Form (SF-12 V) survey; a 12-item scale providing physical health (PCS) and mental health (MCS) components of quality of life (Kazis et al., 1998; Selim et al., 2009). The SF-12 V is a valid and reliable instrument for health-related quality of life (Kazis et al., 1998; Selim et al., 2009).

1.3. Meaning of illness

The Meaning of Illness Questionnaire (MIQ) was developed based on Lazarus and Folkman's theoretical work on cognitive appraisal of stressful events (Browne et al., 1988; Weir et al., 1994). Items are rated on a 7-point scale ranging from not at all to definitely yes, with specific items being reverse-coded, so higher scores indicate more positive meaning. Items are analyzed in 5 subscales:

1. Impact of illness: this subscale focuses on the impact on day-to-day living and relationships with family and friends. Examples of questions include whether the illness has negatively affected their day-to-day life, relationships with family and friends, or job/school activities, as well as, whether they see it as harmful.
2. Type of stress/attitude of harm: this subscale considers the attitudes of harm/loss/threat, as well as their view of prognosis. Examples of questions include whether the participants would describe the illness as threatening, disabling, or disfiguring, and whether they see it as a loss or deteriorating.
3. Degrees of stress/change in commitment: this subscale measures change in commitments, and secondary appraisal of coping resources. Examples of questions include whether participants see the illness as stressful, if they could change or do something about their illness, if they have to hold back from doing something they want, if they have enough energy/stamina, or are pleased with their outlook and how they are handling things.
4. Challenge/Motivation/Hope: this subscale measures feelings of challenge, hope, motivation, and control. Examples of questions include whether participants see their illness as a challenge, if they are certain about how things will turn out, and if they are determined to try to function independently in spite of their illness.
5. Non-anticipated vulnerability: this subscale considers vulnerability, expectancy and recurrence of the illness. Examples of questions include whether they expected the illness before they were told about it, if they think they played a part in the occurrence, and if they believe it will reoccur or a second illness like it will occur.

Studies have found the MIQ to be a valid and reliable measure of the different meanings that may be given to an illness (Browne et al., 1988; Weir et al., 1994). Test–Retest reliability was computed with kappas ranging between 0.45 and 1.00.

1.4. Covariates

Specific measures for demographics (age, gender, marital status, race/ethnicity), socioeconomic status (education, employment, income, insurance), medical comorbidities, diabetes duration and depression were obtained. Age was categorized into four groups (<50, 50–64, 65–74, and 75+ years old). Race was dichotomized as African American/Black or White. Marital status was also dichotomized as married versus not married. The latter category included separated/divorced, widowed and never married. The number of years of education was divided into three categories (less than 12th grade, high school, and beyond high school graduate). Work status was categorized as working, retired, disabled and other to indicate in-school, homemaker or unemployed. The annual income combined from all sources was categorized as < $20 000, <$35 000, <$50 000, <$75 000 and $75 000+. The insurance status was dichotomized as insured through VA only versus dual insurance (VA and other sources). The comorbidity status was considered a continuous variable and was determined based on Charlson comorbidity index (Charlson, Pompei, Ales, & MacKenzie, 1987). Questions asked whether participants were diagnosed with comorbidities such as liver disease, renal failure, myocardial infarction and congestive heart failure, but responses were not limited to complications of diabetes. The diabetes question was removed, as diagnosis of diabetes was an inclusion criterion for participation in the study. Diabetes duration (years) and depression (Center for Epidemiologic Studies scale) were also continuous. The Center for Epidemiologic Studies scale is the sum of 20 items with higher scores indicating more depressive symptoms and a score of 16 or more considered depressed (Radloff, 1977). The scale was shown to be reliable in previous research (alpha > .85) (Hann, Winter, & Jacobsen, 1999; Miller, Anton, & Townson, 2008).