Sense of mastery as mediator buffering psychological distress among people with diabetes

Karin Elisabeth Bennetter [a], Jocelyne Clench–Aas [b], Ruth Kjærsti Raanaas [a,*]

[a] Department of Landscape Architecture and Spatial Planning, Norwegian University of Life Sciences, Norway
[b] Division of Mental Health, Norwegian Institute of public health, Norway

ARTICLE INFO

ABSTRACT

Aims: The purpose of this study was to examine the association between diabetes with or without other comorbid somatic diseases and depression and anxiety, and to explore the mediating role of sense of mastery and social support.

Methods: Data were obtained from a cross-sectional health survey conducted in Norway (n = 6827). People with diabetes alone or with simultaneous comorbid somatic diseases were compared to a group with no known somatic diseases.

Results: Among people with diabetes alone, 16.3% reported having depression and anxiety. Having diabetes was associated with 3 times greater odds for anxiety compared to the control group, and 2 times greater odds for depression. Among individuals with diabetes and comorbid somatic diseases, 17.4% reported depression and 11.6% reported symptoms of anxiety. The odds for both were approximately 2 times greater than in the control group. Sense of mastery, but not social support, protected against depression in both groups and against anxiety in the diabetes with comorbidity group.

Conclusions: Comorbidity between diabetes and other somatic diseases seems to be related to depression to a larger degree, whereas having diabetes alone relates more to anxiety. This can possibly be explained by the overall burden in the comorbidity group and the related absence of sense of mastery.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Diabetes mellitus, whether it is *type 1* (T1DM) or *type 2* (T2DM), is a chronic and life threatening disease that requires regular monitoring of blood glucose and administration of diet and medication. In Norway, approximately 165,000 people (3.2% of the population) have blood glucose-lowering drugs dispensed, indicating that they are diagnosed with either T1DM or T2DM (Strom et al., 2014).

Chronic somatic diseases, which in this case are defined as an impairment of normal physiological function affecting all or part of the organism, are frequently associated with psychological distress (Gili et al., 2010). Accordingly, people with diabetes are found to be at particular risk of developing mental health problems such as depression (Anderson, Freedland, Clouse, & Lustman, 2001; Andreoulakis, Hyphantis, Kandylis, & Iacovides, 2012). In a meta-analysis, the prevalence of depression ranges from 8%–18% for severe types to 15%–35% for milder types among people with diabetes (Andreoulakis et al., 2012). In the same analysis, rates for depression are found for individuals with diabetes to be about 1.4–3 times as likely compared to non-diabetic controls. Comorbid depression among people with diabetes is associated with nonadherence to diabetes self-care (including dietary, exercise, medication etc.), disease control, symptom burden, and development of medical complications (Katon, 2008).

Diabetes is also associated with anxiety defined as both a generalized anxiety disorder and elevated symptoms of anxiety (Egede & Dismuke, 2012; Smith et al., 2013). Generalized anxiety disorder is reported to be present in 14% of people living with diabetes, and a prevalence of up to 40% is reported looking at elevated symptoms of anxiety (Bener, Al-Hamaq, & Dafeeah, 2011). In the meta-analysis by Smith et al. (2013) a pooled odds ratio of 1.25 for anxiety among people with diabetes was found. However, the association between diabetes and anxiety is suggested to be weaker than between diabetes and depression (Egede & Dismuke, 2012). The association with anxiety is linked to glycemic control, age and lifetime severe hypoglycaemia (Labad et al., 2010; McDade-Montez & Watson, 2011).

People with diabetes are found to be at particular risk of developing somatic comorbidities (Fillenbaum, Pieper, Cohen, Cornoni-Huntley, & Guralnik, 2000; Topic et al., 2013) and the prevalence rate of psychological distress appears to increase according to the number of comorbid somatic diseases (Gili et al., 2010). An overall prevalence of

serious psychological distress for individuals with diabetes and comorbidities has been reported to be 7.6% compared to 3.6% for people without diabetes (Egede & Dismuke, 2012; Li et al., 2009). In addition, comorbid abdominal obesity and cardiovascular disease are identified as risk factors for depression among people with diabetes (Labad et al., 2010). Although many studies have found a relationship between diabetes and psychological distress, to our knowledge few studies have systematically differentiated between diabetes with and without somatic comorbidity when studying this relationship.

Psychosocial resources, such as sense of mastery (Raaijmakers et al., 2014) and social support (van Dam et al., 2005) are reported to protect against developing psychological distress. Sense of mastery is associated with self-management behaviors, preventative care and proper utilization of health care services, as well as responsiveness to interventions for health promotion, which may possibly account for its protective ability (Skaff, Mullan, Fisher, & Chesla, 2003). The concept is similar to self-efficacy (Bandura, 1977), but whereas self-efficacy often is applied to the person's feeling of competence in a specific task, sense of mastery is used more globally, referring to one's overall sense of control in life (Skaff, Pearlin, & Mullan, 1996). The risk of diminished sense of mastery, is associated with an increase in both chronic conditions and functional disability (Jang, Chiriboga, Lee, & Cho, 2009). It has also been reported that poor sense of mastery significantly increases the risk of developing anxiety (Gordon et al., 2007).

Social support from family and friends is in some studies reported to facilitate better diabetes self-management (Gallant, 2003; van Dam et al., 2005), although the literature is not consistent (van Dam et al., 2005). Social support includes social behaviors such as seeking advice, emotional support and instrumental support such as direct assistance with illness management activities. Self-care tasks, such as dietary behaviors and physical activity appear to be particularly susceptible to social support (Gallant, 2003; Qiu, Sun, Cai, Liu, & Yang, 2012).

Since earlier studies examining the potential buffering effects of psychosocial resources on individuals with diabetes have not distinguished between people with diabetes alone and those with somatic comorbidity, the aim of the present study was to examine the association between diabetes and psychological distress, distinguishing between people with only diabetes and those with somatic comorbidity. Additionally, the aim was to explore the extent to which the possible association was mediated by sense of mastery and social support. The research questions were: Do relatively more people with diabetes, with or without other comorbid somatic diseases, suffer from anxiety and depression compared to people with no known somatic disease? Can sense of mastery or social support mediate the reduction of anxiety and/or depression among people with diabetes, with or without other comorbid somatic diseases?

2. Materials and methods

2.1. Design and participants

The present study presents data from a cross-sectional health survey conducted in Norway in 2002 by Statistics Norway (SN) (Hougen & Gløboden, 2002). A random sample of 10,000 non-institutionalized subjects over the age of 15 years was drawn to participate in the survey. The sample consisted of two subsamples, a main and a supplementary sample, each containing 5000 subjects. The main sample was drawn following SN's standard sample plan in which Norway is divided in 109 strata. The supplementary sample was drawn randomly from all of the municipalities in Norway. Participants from both samples were interviewed (1/2 h) by home visits or by phone (30%) (Hougen & Gløboden, 2002). Some participants were lost from the sample due to death, travel abroad, or institutionalization. A total of 6827 (89.5%) participants completed the interview, with 3410 males and 3417 females. A written "helping card" which provided a list of 59 diseases, was used in the interview to simplify a sensitive and slightly difficult question (participants interviewed by phone were sent the cards in the mail). After the interview, all participants received a health questionnaire by post where data on mental health and psychosocial variables were obtained. Due to further attrition, a total of 5343 participants responded to both interview and postal questionnaire. Information about education and household income was retrieved from national registries and linked to the data set.

2.2. Measures

Diabetes was measured with the following question: "Do you have, or have you had (i.e.) diabetes mellitus?" Score opportunities were 1 = have, 2 = have had, 3 = have never had. Participants who indicated "having had" diabetes (13 participants with diabetes alone and 55 participants with diabetes and comorbidity) were excluded from statistical analyses since the current study focuses on chronic symptoms of diabetes. Due to lack of information in the dataset concerning type of diabetes (T1DM versus T2DM), the term *diabetes* will be used in this article without differentiating further. Other *somatic diseases* were measured with a similar question as above, but with reference to the particular disease of interest. Somatic diseases included in the current study were: epilepsy, osteoporosis, angina pectoris, coronary heart disease, stroke, cancer, allergy, high blood pressure, metabolism disease, ankylosing spondylitis (previously known as Bekhterev's disease), arthritis, chronic bronchitis/emphysema/COPD, psoriasis, atopic eczema, urinary incontinence, fractures, removed organ, and ulcers. Four population subgroups were studied: 1) individuals with diabetes alone; 2) individuals with diabetes and other comorbid somatic diseases; 3) individuals who do not have diabetes but have other somatic diseases; and 4) the control group, individuals with no known somatic disease.

Psychological distress in terms of *depression* and *anxiety* was assessed using the Hopkins Symptom Check List (HSCL-25), which measures symptoms over the previous 14 days (Strand, Dalgard, Tambs, & Rognerud, 2003). It contains 25 items covering two subscales for depression and anxiety. Responses are given on a four-point scale (1 = "not at all" to 4 = "extremely"). In the present study, averages for each subscale are dichotomized into "low" and "high" scores with a cut-off point of 1.75 (Strand et al., 2003). A "case" is accepted if no more than two items are missing from the items measuring depression or anxiety, in which case mean values were substituted for the missing items. Cronbach's alpha for the total HSCL-25 scale was .93; for depression it was .91 and for anxiety .84.

Sense of mastery was measured using the five-item version of the seven-item scale developed by Pearlin, Lieberman, Menaghan, and Mullan (1981). The five selected items ask about the experience of controlling and coping with life such as: "I have little control over the things that happen to me" and "I often feel helpless in dealing with the problems of life". Responses were given on a five point scale (0 = "agree" to 4 = "do not agree"). For those with no more than two missing data points, mean values were substituted for the missing items. A sum score was calculated ranging from 0 to 20. Cronbach's alpha was 0.86.

Social support was measured using the Oslo 3 Support Scale (OSS-3 scale) (Dalgard et al., 2006). It is comprised of 3 questions about the number of close confidants they can count on if they have serious problems (scores were: 1="no one", 2 = "1 or 2", 3 = "3-5" or 4 = "more than 5"), sense of concern or interest from other people (scores were: 1 = "Great concern and interest" to 5="no concern and interest"), and sense of instrumental support from neighbors (scores were: 1="very easy" to 5 = "very difficult"). The corresponding scores in the two last questions were recoded in reverse order. The questions were further merged into a social support index by adding up the scores for each item, ranging from 3 to 14. Data had to be complete (no missing) to count as a case.