Anger and mental health in type 2 diabetes

Andrew Kolbasovsky

ARTICLE POINTS

1 Psychological symptoms are not uncommon in people with diabetes; anger is one such symptom.

2 People with diabetes who receive treatment for mental health expressed greater anger than people with no diabetes who receive treatment for mental health.

3 Excessive anger has the potential to interfere with optimal self-care of diabetes.

4 Anger and its impact on self-care should be assessed and addressed as part of treatment for diabetes.

KEY WORDS

- Anger
- Mental health
- Diabetes
- Self-management
- Therapies

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Introduction

Previous qualitative studies have identified anger as an important issue for people with diabetes yet few quantitative studies have addressed this topic. In this study, participants with type 2 diabetes had greater anger than participants without diabetes. There was a significant association between diabetes status and anger ($p < 0.01$). Our findings suggest that members of the diabetes treatment team need to assess and address issues of anger, which may affect the physical as well as the mental health of people with diabetes.

Diabetes has been associated with an elevated rate of psychological symptoms. The increased prevalence of depressive symptoms experienced by people with diabetes has been well documented (Anderson et al, 2001; Snoek, 2002). Anger, another psychological symptom theorised to be more prevalent in people with diabetes (Cox, 1994; Lewis, 1998), has received much less attention in the literature and studies addressing anger have relied on qualitative designs.

In a study of 14 people with type 2 diabetes, McCord and Brandeburg (1995) noted that many expressed strong feelings of frustration and anger. Similar results were obtained in open-ended interviews of 22 people with diabetes in Korea (Choe et al, 2001) and Snoek (2002) noted that misconceptions about having to start insulin treatment are often associated with negative emotions such as anger and fear. The possible connection between anger and diabetes is particularly important for clinicians who work in primary care, because chronic anger has been linked with increased risk of cardiovascular disease (Chang et al, 2002; Sirois and Burg, 2003), hypertension (Rutledge and Hogan, 2002), and elevated cholesterol (Waldstein et al, 1990).

One particular group of people with diabetes who may be at the highest risk of elevated anger are people with diabetes who have a mental health condition as Posternak and Zimmerman (2002) found that anger is a prominent emotion for people receiving outpatient psychiatric care.

Hypotheses

It is hypothesised that people who are treated for type 2 diabetes in a primary care setting and who are also receiving care at an outpatient mental health centre will report significantly greater anger than people who are treated at the same mental health centre and who do not have diabetes.

It is further hypothesised that diabetes status will be more strongly associated with anger than age, gender, mental health diagnosis category, type of insurance, or presence of co-occurring medical conditions other than diabetes.

Methods

A convenience sample of 95 adults (aged ≥21 years) receiving treatment from a therapist (nurse, social worker, or psychologist) and/or psychiatrist at an outpatient mental health centre was identified. Participants completed a background information sheet and the Novaco Anger Inventory (short form). A total of 95 people were invited to participate in the study and all agreed to complete the questionnaires. Of the 95 participants, 39 reported that they received primary care treatment for type 2 diabetes and 56 reported that they did not have diabetes. The ages of the participants with type 2 diabetes ranged from 42–72 years, with an average age of 55.51 years and a

Table 1. Participant characteristics

Characteristics	Patients with diabetes	Patients without diabetes
Mean (SD) age	55.51 (8.53)	47.95 (14.43)*
Gender, n(%)		
Male	24 (61.5)	25 (44.6)
Female	15 (38.5)	31 (55.4)
Type of insurance, n(%)		
Commercial	27 (69.2)	43 (76.8)
Medicare	11 (28.2)	10 (17.9)
Medicaid	1 (2.6)	3 (5.4)
DSM-IV Diagnostic Category, n(%)		
Depressive disorder	17 (43.6)	30 (53.6)
Anxiety disorder	10 (25.6)	14 (25.0)
Adjustment disorder	6 (15.4)	11 (19.6)
Psychotic disorder	5 (12.8)	0 (0)
Bipolar disorder	0 (0)	1 (2.6)
Developmental disorder	1 (2.6)	0 (0)
*Additional medical diagnosis other than diabetes, n (%)***		
Yes	18 (46.2)	12 (21.4)
No	21 (53.8)	44 (78.6)

*$p < 0.01$, **$p < 0.05$. *Analyses were conducted using Chi-square and t tests for independent samples.*

standard deviation of 8.53. The ages of the participants without diabetes ranged from 21–80 years, with an average age of 47.95 years and a standard deviation of 14.43. Further data of participant characteristics are presented in *Table 1*.

Instruments

The Novaco Anger Inventory (NAI) short form (Novaco, 1975), a valid, reliable, conveniently administered and well-known tool designed to measure the degree of provocation or anger people would feel if placed in certain situations, was administered to assess anger level. The NAI-25 contains 25 items, each consisting of a situation. A rating is given for how angry or annoyed the rater would feel in each situation. Responses range from 'very little' to 'very much' on a 5-point scale.

Background information was obtained from a survey in which participants indicated their diabetes status, as well as any medical conditions other than diabetes, age, and gender.

Procedure

Each participant was recruited by one of eight mental health treatment providers at the mental health centre. The purpose of the study and its requirements were explained and each person was invited to participate. After providing informed consent to take part in the study, participants were asked to complete the Novaco Anger Inventory (short form) and a brief background information sheet. A mental health diagnosis was obtained using the diagnostic and statistical manual of mental disorders (DSM-IV [American Psychiatric Association, 1994]). The confirmation of the diagnosis of type 2 diabetes was obtained by chart review.

Statistical analysis

A cross-sectional study was conducted to evaluate the association between having type 2 diabetes and reported anger. Age, gender, type of insurance, DSM-IV diagnostic category (depressive disorder, anxiety disorder, adjustment disorder, psychotic disorder, bipolar disorder, developmental disorder) and whether or not the person had a medical diagnosis other than diabetes were considered possible confounding variables that may be associated with anger scores. Chi-square analyses and a t-test for independent samples were conducted as appropriate, to determine whether any of these variables were significantly associated with anger scores. In order to control for the effect of any variables found to be associated with anger, each significant variable was included in the hierarchical regression model along with diabetes status.

Results

As depicted in *Table 1*, the group of people with diabetes was significantly older than the group of people without diabetes ($p < 0.01$.) Chi-square analyses revealed that the group of people with diabetes reported significantly greater medical problems other than diabetes than did the group without diabetes ($p < 0.05$). There were no significant differences between the groups

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for any of the following variables: gender, type of insurance, or DSM-IV diagnosis category. It was felt that with regard to the mental health diagnosis variable, due to the limited sample size and relatively high number of diagnostic categories, this study may have lacked the power to detect a true effect for this variable. For this reason, mental health diagnosis was included in the final regression model.

Diabetes status was statistically significantly associated with anger ($t = -3.94$; $p < 0.01$) as the results from the regression analysis depicted in *Table 2* demonstrate. The mean (SD) anger score for the group with diabetes was 63.6 (16.5); the average anger score for the group without diabetes was 48.5 with a standard deviation of 13.4. Thus, in this sample of people receiving outpatient mental healthcare, those who also had diabetes reported significantly greater levels of anger than those who did not have diabetes.

Age was significantly associated with anger ($p < 0.05$) with older participants reporting a greater level of anger. Results of the regression analysis indicated that 27% of the variance in anger scores could be explained by the four independent variables included in the regression model.

Table 2. Summary of hierarchical regression results for anger

Variable	Mean (SE)	Beta	t(90)
Diabetes status	-12.75 (3.24)	-0.38	-3.94*
Age	0.26 (0.12)	0.20	2.07**
Medical diagnosis (yes/no)	-2.05 (3.39)	-0.05	-0.60
DSM-IV diagnostic category	2.62 (1.41)	0.17	1.86

*R^2=0.27, *p<0.01, **p<0.05*

Discussion

The group with diabetes was significantly older than the group without diabetes. This finding is consistent with the increased risk of diabetes with age (King et al, 1998). The group with diabetes also reported significantly more medical conditions other than diabetes which is not surprising given the association between diabetes and many other medical conditions (Viberti, 2003).

Results from the regression analysis revealed that diabetes status and age were significantly associated with anger scores. The highly significant finding that the group with type 2 diabetes reported significantly greater anger and the fact that diabetes status was the best predictor of anger confirmed the hypotheses of this study. While a convenience sample rather than a random sample was used, all 95 people asked to participate did so, thus decreasing the chance of selection bias. Overall, the results from this study suggest that people with type 2 diabetes who also receive outpatient mental health treatment experience significantly greater levels of anger than people receiving the same care without diabetes.

Limitations

This study had two major limitations. First, diabetes status was self-reported. As a consequence some of the participants self-identified as not having diabetes could be false negatives, diluting the strength of the association. Nevertheless, over 27% of the variance in anger was explained by diabetes status and three other independent variables. Second, the design of the study only allows for the evaluation of association. However, the finding of this study is consistent with qualitative studies that identified anger as a major theme for people with diabetes (McCord and Brandeburg, 1995; Choe et al, 2001; Snoek, 2002).

Implications

The high rate of anger among people with diabetes who also have a mental health diagnosis should be of great concern to all members of the diabetes treatment team working within the primary care setting. Treatment for many mental health services, particularly in the US, are now primarily provided within the primary care setting (Coyne, 2001) and many people with type 2 diabetes also have a diagnosed or undiagnosed comorbid mental health condition (Anderson et al, 2001). The quantitative results from this study and the qualitative results of other studies (McCord and Brandeburg, 1995; Choe et al, 2001; Snoek et al, 2002) suggest that many people

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1 Diabetes status was statistically significantly associated with anger.

2 In this sample of people receiving outpatient mental healthcare, those who also had diabetes reported significantly greater levels of anger than those who did not have diabetes.

3 Older participants reported a greater level of anger.

4 The group with diabetes also reported significantly more medical conditions other than diabetes which is not surprising given the association between diabetes and many other medical conditions.

5 The high rate of anger among people with diabetes who also have a mental health diagnosis should be of great concern to all members of the diabetes treatment team working within the primary care setting.

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1 Members of the primary care treatment team, as well as mental health providers should be able to identify and discuss issues of anger when working with people with diabetes.

2 Anger has the potential to become a barrier to proper self-management of diabetes and can interfere with the healthcare provider-patient relationship.

3 People with diabetes may benefit knowing that feelings of anger can be common for people coping with diabetes, and that there are effective therapies available to address anger.

4 Further quantitative studies are needed to demonstrate the connection between diabetes and anger across a greater variety of settings.

receiving care for type 2 diabetes in the primary care setting are also dealing with strong feelings of anger, particularly those who also have a mental health diagnosis.

It is important for members of the primary care treatment team, as well as mental health providers to identify and discuss issues of anger when working with people with diabetes, especially as anger has the potential to become a barrier to proper self-management of diabetes and can interfere with the healthcare provider-patient relationship. People with diabetes who often feel frustrated, angry, or irritable may also benefit from knowing that feelings of anger can be common for people coping with diabetes, and that there are effective therapies available to address anger. Healthcare providers can also help these people to identify ways in which anger may become a barrier to the management of diabetes.

Addressing issues of anger

There are effective therapies available for anger management. These typically involve teaching people to recognise situational and physiological cues of anger. By recognising rising anger earlier it is easier to intervene. Interventions that are taught to be implemented after early recognition include cognitive restructuring, relaxation techniques, and self-statements.

Qualitative studies have demonstrated that people with diabetes (irrespective of receiving mental health care) report a great deal of anger in interviews. Additional quantitative studies documenting the level of anger for people with diabetes who do not have a mental health condition are also needed.

Conclusion

Further quantitative studies are needed to demonstrate the connection between diabetes and anger across a greater variety of settings. In addition, future research should identify the extent to which anger impacts HbA_{1c} levels. The benefits of providing anger management or other psychotherapy for people with diabetes who report a high level of anger should also be assessed. ■

American Psychiatric Association (1994) *Diagnostic and statistical manual of mental disorders 4th Edition.* American Psychiatric Association, Washington, US

Anderson R, Freeland K Clouse R et al (2001) The prevalence of comorbid depression in adults with diabetes. *Diabetes Care* **24**: 1069–78

Chang P, Ford D, Meoni L et al (2002) Anger in young men and subsequent premature cardiovascular disease: the precursors study. *Archives of Internal Medicine* **162**(8): 901–6

Choe M, Padilla G, Chae Y et al (2001) Quality of life for patients with diabetes in Korea: the meaning of health related quality of life. *International Journal of Nursing Studies* **38**(6): 673–82

Cox S (1994) How I coped emotionally with diabetes in my family. *Professional Care Mother Child* **4**(5): 139–41

Coyne J (2001) Depression in primary care. *American Psychological Society* **14:** 2

King H, Aubert R, Herman W (1998) Global prevalence of diabetes 1995–2025: prevalence, numerical statistics and estimates. *Diabetes Care* **21**(9): 1414–31

Lewis K (1998) Emotional adjustment to a chronic illness. *Lippincotts Primary Care Practice* **2**(1): 38–51

McCord E, Brandeburg C (1995) Beliefs and attitudes of persons with diabetes. *Family Medicine* **27**(4): 267–71

Novaco R (1975) *Anger control: the development of an experimental treatment.* Lexington, KY, Lexington.

Posternak M, Zimmerman M (2002) Anger and aggression in psychiatric outpatients. *Journal of Clinical Psychiatry* **63**(8): 665–72

Rutledge T, Hogan B (2002) A quantitative review of prospective evidence linking psychological factors with hypertension development. *Psychosomatic Medicine* **64**(5): 758–66

Sirois B, Burg M (2003) Negative emotion and coronary heart disease: a review. *Behavior Modification* **27**(1): 83–102

Snoek F (2002) Breaking the barriers to optimal glycaemic control – what physicians need to know from patients' perspectives. *International Journal of Clinical Practice* **129**: 80–4

Viberti G (2003) The need for tighter control of cardiovascular risk factors in diabetic patients. *Journal of Hypertension* **121**(1): 53–6

Waldstein S, Manuck S, Bachen E et al (1990) Anger expression, lipids, and lipoproteins. Poster session presented at the 11th Annual meeting of the Society for Behavioral Medicine, Chicago.