The Relation Between Anxiety and Automatic Thoughts Associated to Depression Among People Diagnosed with Type II Diabetes

Manuela Răscol

Titu Maiorescu University, Bucharest, Romania

Abstract

The present paper proposes to examine the way anxiety, as defined by four components (emotional, cognitive, behavioral and somatic) relates to depressive automatic thoughts among patients diagnosed with type II diabetes, and also the differences between the levels of anxiety and depressive thoughts of the patients suffering from diabetes, as opposed to the ones registered by healthy individuals.

The study has involved a sample of 33 patients diagnosed with type II diabetes aged between 26 and 79 years old (M_{age} = 60.12, SD = 12.12) and a control sample of 33 clinically healthy participants (M_{age} = 55.06, SD = 11.57). Both samples have completed the Automatic Thoughts Questionnaire (ATQ-30; Hollon & Kendall, 1980) and the Four System Anxiety Questionnaire (FSAQ; Koksal & Power, 1990).

The obtained results have shown a positive and statistically significant correlation between depressive automatic thoughts and global anxiety ($r = .78$, $p < .01$). The correlations between automatic thoughts associated to depression and each component of anxiety were also significant - emotional anxiety ($r = .66$, $p < .01$), cognitive anxiety ($r = .69$, $p < .01$), behavioral anxiety ($r = .63$, $p < .01$) and somatic anxiety ($r = .65$, $p < .01$).

The obtained data may represent starting points for more thorough studies regarding the potential methods of increasing the quality of life within the diabetes patients, that could be based on changing their cognitive and behavioral strategies.

Keywords: *anxiety, automatic thoughts associated to depression, type II diabetes*

Corresponding author: Manuela Răscol

Phone number: -

E-mail address: manuela.rascol@gmail.com

I. INTRODUCTION

The scientific literature regarding quality of life related to health issues has gained increased attention during the last years, especially due to studies which have sustained the importance of psychosocial factors in modeling human behavior. Thus, the beliefs regarding health, anxiety, social support, coping strategies, personality types or negative thoughts associated to depression, could all be factors that influence one's quality of life (Rubin & Peyrot, 1999).

Patients suffering from diabetes, whether type I, II or gestational, confront an incurable disease which requires both medication and glycemic control, family support and education and also changes of life style.

Diabetes is one of the chronic diseases which frequently affect the quality of life and is often associated to depression (Egede & Ellis, 2010).

Under stress situations, suprarenal glands (adrenal) release two hormones in the blood, known as stress hormones: adrenaline (epinephrine) and cortisol. The adrenaline inhibits the insulin secretion on the pancreatic level, while the cortisol determines excessive liver glucose secretion and also decreased glucose consume on tissue levels, leading to hyperglycemia (Surwit, Feinglos & Scovern, 1983).

Shaw (as cited in Snoek & Skinner, 2005) stated that "although the disease has a physiological basis, the past years have emphasized more and more the psychological aspects which occur right from the moment the patient receives the diagnosis. Sometimes, the relation to psychological factors is very subtle while other times it is extremely visible".

Rubin & Peyrot (2002) consider that patients' self-criticism and personalization (a type of cognitive distortion that seems to be wide spread among diabetics) are highly connected to the guilt they feel and may lead to the installation of depression. Many times diabetics are focused on the things they have done or should have done in order to prevent the occurrence of the disease.

The concern manifested towards the psychological component of diabetes treatment is observable through the high number of published articles discussing different perspectives aimed at finding solutions for medical, cognitive, emotional and social problems. Therefore, minimizing special needs of the patients and guiding them to maintaining a quality of life close to the healthy population, is desired (Snoek & Skinner, 2007).

Pawaskar, Anderson & Balkrishnan (2007) have shown that the occurrence of depression is more emphasized among middle aged population suffering from chronic medical conditions such as diabetes. The chances of developing depression are doubled among these patients compared to the healthy population.

A series of studies support the hypothesis that diabetes is associated to high risk of developing anxiety disorders and acute depressive symptoms (Smith et al., 2013).

Comorbidity between depression and anxiety has been proven to be the most important risk factor regarding type II diabetes in correlation to social and economic factors, life style and markers of diabetes metabolic syndrome (Engum, 2005).

The existence of depression among people with sugar diabetes is associated to low compliance to treatment, low metabolic control, high complication rate, decrease of quality of life, high costs of medical assistance, high dysfunction degree, decreased productivity and high risk of death (Egede & Ellis, 2010).

The results of the study conducted by Sultan et al. (2010) have shown that, in addition to depressive disposition, both negative thoughts and anxiety are basic elements of correctly identifying clinical depression related to chronic diseases such as diabetes.

Based on the theoretical frame and studies briefly discussed, the present paper has proposed to examine whether there is a significant correlation between anxiety, as measured through its four components (emotional, cognitive, behavioral and somatic) and automatic thoughts associated to depression in the case of patients diagnosed with type II diabetes.

This study was based on three hypotheses. The first one is that the patients suffering from diabetes may show higher levels of anxiety the more they experience negative automatic thoughts associated to depression. The second one states that the diabetics could be more anxious compared to the clinically healthy population, regarding both global anxiety and its four components. The third hypothesis asserts that the diabetics could develop a higher number of depressive automatic thoughts compared to the control sample.

II. METHOD

1. Participants

The study has involved a number of 33 patients of the "N. C. Paulescu" Romanian Institute of Diabetes, Nutrition and Metabolic Diseases who suffer from type II diabetes, and a number of 33 clinically healthy subjects who composed the control sample.

The group of diabetes patients were aged between 26 and 79 years old (M_{age} = 60.12, *SD* = 12.12), out of which 17 were male and 16, female. As for the type of treatment, 22 of the patients received a treatment schema composed of tablets aimed to maintain a normal glycemic level while 11 received insulin treatment.

The control sample included persons aged between 24 and 78 years old (M_{age} = 55.06, *SD* = 11.57), out of which 14 were male and 19, female.

2. Assessment instruments

Both groups of participants have completed the Automatic Thoughts Questionnaire (ATQ-30; Hollon & Kendall, 1980) and the Four Systems Anxiety Questionnaire (FSAQ; Koksal & Power, 1990).

The Automatic Thoughts Questionnaire (ATQ-30; Hollon și Kendall, 1980) has been conceived with the purpose of identifying and assessing the frequency of negative automatic thoughts associated to depression. Although the 30 items questionnaire has initially been built and validated on male and female clinically healthy population, Harrell & Ryon (1983) have also examined its utility for clinical population. They have shown a significant correlation between ATQ-30 and Beck Depression Inventory (BDI; Beck, 1961), as they both share the same theoretical foundation (Beck's cognitive theory) and also between ATQ-30 and the Minnesota Multiphasic Personality Inventory – Depression Scale (Schaefer et al., 1985). These findings indicate that ATQ-30 presents an adequate concurrent validity among both clinical and non-clinical populations.

The questionnaire items are evaluated on a 5-point Likert scale (from 1 – "not at all" to 5 – "all the time"). Within the present study, the internal consistency of the scale was good as reflected by an alpha Cronbach equal to .75 (95%*CI* = [.65, .83]).

The Four Systems Anxiety Questionnaire (FSAQ; Koksal & Power, 1990) is based on the idea that anxiety is a multidimensional construct, assessing the four different components that proved to define anxiety: somatic, cognitive, behavioral and emotional. FSAQ includes 60 items and showed satisfying levels of validity and reliability.

The items are evaluated through "Yes/No" answers, as each item is given a value on each of the four subscales. In order to identify each subscale's score and also the global score, the sum of all "Yes" answers is calculated.

3. Research procedure

The procedure of applying the tests in the diabetics sample was preceded by a consultation conducted by their treating physician, a specialist in nutrition and diabetes diseases. The consultation took place within the institute and had the purpose of verifying if the patients had the appropriate physical and mental condition in order to be able to participate in the study.

The ethical principles have been met by informing the patients on the purpose of the study and asking them to sign the informed consent before giving their answers to the questionnaires.

After these steps had been accomplished, the two questionnaires were individually administered under the paper and pencil version, in a cabinet within the institute. The first administered test was the Automatic Thoughts Questionnaire (ATQ-30; Hollon & Kendall, 1980) followed by the Four Systems Anxiety Questionnaire (FSAQ; Koksal & Power, 1990).

III. STUDY RESULTS

In order to test the study hypotheses, we have started the statistical analysis by verifying the normality of distribution for each scale and subscale, and continued by calculating the Pearson coefficient in order to extract the correlation between anxiety and depressive automatic thoughts in the case of type II diabetes patients and control sample participants. The final phase was to examine the differences between the two groups, with respect to anxiety and automatic thoughts associated to depression, using the t independent test.

Table 1. Means and standard deviations within diabetes and control sample

		Diabetics (N = 33)		Control group (N = 33)	
		M	*SD*	*M*	*SD*
ATQ-30	Automatic Thoughts	50.88	18.97	45.30	19.34
FSAQ	Emotional Anxiety	28.48	18.82	14.53	14.81
	Cognitive Anxiety	36.03	22.57	19.25	18.45
	Behavioral Anxiety	30.79	18.75	18.81	21.82
	Somatic Anxiety	35.18	21.76	18.07	16.38
	Global Anxiety	130.50	69.42	70.67	63.00

Table 2. Correlation coefficients of the control group (N = 33) and diabetes patients (N = 33).

			1	2	3	4	5	6
ATQ-30	1.	Automatic Thoughts		.61^{**a}	.67^{**a}	.70^{**a}	.52^{**a}	.72^{**a}
FSAQ	2.	Emotional Anxiety	.66**		.89^{**a}	.73^{**a}	.70^{**a}	.93^{**a}
	3.	Cognitive Anxiety	.69**	.78**		.62^{**a}	.68^{**a}	.89^{**a}
	4.	Behavioral Anxiety	.63**	.57**	.69**		.61^{**a}	.86^{**a}
	5.	Somatic Anxiety	.65**	.55**	.58**	.53**		.84^{**a}
	6.	Global Anxiety	.78**	.85**	.90**	.82**	.79**	

Note. a = control group; ** $p < .01$; * $p < .05$.

The results obtained through correlation analysis supported the initial hypothesis, showing that in the case of research groups (diabetes patients and the control group) the anxiety tended to be more pronounced, as the negative automatic thoughts associated to depression increased.

Table 3. T independent test for the differences between the diabetes patients and control group

		M_{diff}	*SEM*	95% Confidence Interval		*t*	*p*	*d*
				Lower	Upper			
ATQ-30	Automatic Thoughts	5.57	4.71	-3.84	14.99	1.18	.24	1.18
FSAQ	Emotional Anxiety	13.95	4.16	5.61	22.28	3.34	.00	3.35
	Cognitive Anxiety	16.78	5.07	6.63	26.93	3.30	.00	3.30
	Behavioral Anxiety	11.98	5.00	1.97	21.99	2.39	.02	2.39
	Somatic Anxiety	17.10	4.74	7.62	26.59	3.60	.00	3.60
	Global Anxiety	59.82	16.31	27.21	92.43	3.66	.00	3.66

Note. $N_{diabetes} = 33$; $N_{control} = 33$

The *t* test results have sustained the hypothesis that diabetics were more anxious than clinically healthy persons as far as all four components of anxiety were concerned. According to the effect size indicator, the intergroup difference regarding the level of the four types of anxiety has been important.

On the other hand, the results have not supported the hypothesis that diabetics develop a higher level of negative depressive automatic thoughts compared to the control group.

IV. DISCUSSION

Comorbidity of depression and anxiety among diabetes patients represents one of the contributing factors for increasing both the mortality risk, as well as the diabetes–related complications that may further affect negatively the perception towards one's quality of life (Engum, 2005; Sultan et al., 2010)

Thus, considering the importance of this issue, the main objective of the current study was to examine the relation between anxiety defined through 4 components (behavioral, emotional, cognitive and somatic), and automatic negative thoughts associated to depression, among Romanian type II diabetes patients.

The obtained results were consistent with previous studies (e.g., Pawaskar, Anderson & Balkrishnan, 2007; Rubin & Peyro, 2002), revealing that as the patients tended to have more depressive automatic thoughts, their emotional, cognitive, behavioral and somatic anxiety increased. Moreover, the level of anxiety as defined by each of the four components was more pronounced in the case of diabetes patients, compared to healthy participants.

The only hypothesis that has not been supported within the present study was the one according to which the people suffering from diabetes presented a higher number of automatic depressive thoughts than the control group. One possible explanation for the not statistically significant results could be that intermediary variables such as age, social status, educational level, occupation have not been analyzed, as they appear different within the two samples of participants.

The present study also comes with a series of limitations regarding the number of participants which is low and not representative for the Romanian population, or the measures that were used – one recommendation being the need of utilizing different depression and anxiety questionnaires, validated on the Romanian population, as well as different research methods.

However, the results presented in this paper may represent starting points for future studies, as the implications of anxiety and negative automatic thoughts associated to depression, on type II diabetes patients could be important. Therefore, an efficient management of the anxious and depressive symptoms, careful observation by the specialists or in-time guidance towards efficient psychotherapy may contribute to the improvement of diabetes patients' quality of life and compliance to treatment.

References

Beck, A. T., Ward, C., & Mendelson, M. (1961). Beck depression inventory (BDI). *Arch Gen Psychiatry, 4*(6), 561-571.

Clark, M., & Asimakopoulou, K. (2005). Diabetes in older adults. *Psychology in diabetes care, 2*, 61-93.

Clarke, D., & Goosen, T. (2009). The mediating effects of coping strategies in the relationship between automatic negative thoughts and depression in a clinical sample of diabetes patients. *Personality and Individual Differences, 46*(4), 460-464.

Egede, L. E., & Ellis, C. (2010). Diabetes and depression: global perspectives. *Diabetes research and clinical practice, 87*(3), 302-312.

Engum, A. (2007). The role of depression and anxiety in onset of diabetes in a large population-based study. *Journal of psychosomatic research, 62*(1), 31-38.

Harrell, T. H., & Ryon, N. B. (1983). Cognitive-behavioral assessment of depression: clinical validation of the automatic thoughts questionnaire. *Journal of Consulting and Clinical Psychology, 51*(5), 721.

Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive therapy and research, 4*(4), 383-395.

Janda, L. (2002). *Douăzeci şi patru de teste de personalitate*, Ed. Trei, Bucureşti.

Koksal, F., & Power, K. G. (1990). Four Systems Anxiety Questionnaire (FSAQ): A self-report measure of somatic, cognitive, behavioral, and feeling components. *Journal of Personality Assessment, 54*(3-4), 534-545.

Pawaskar, M. D., Anderson, R. T., & Balkrishnan, R. (2007). Self-reported predictors of depressive symptomatology in an elderly population with type 2 diabetes mellitus: a prospective cohort study. *Health Qual Life Outcomes, 5*, 50.

Rubin, R. R., & Peyrot, M. (1999). Quality of life and diabetes. *Diabetes/metabolism research and reviews, 15*(3), 205-218.

Rubin, R. R., & Peyrot, M. (2002). Was Willis right? Thoughts on the interaction of depression and diabetes. *Diabetes/metabolism research and reviews, 18*(3), 173-175.

Schaefer, A., Brown, J., Watson, C. G., Plemel, D., DeMotts, J., Howard, M. T., ... & Anderson, D. (1985). Comparison of the validities of the Beck, Zung, and MMPI Depression Scales. *Journal of Consulting and Clinical Psychology, 53*(3), 415.

Smith, K. J., Béland, M., Clyde, M., Gariépy, G., Pagé, V., Badawi, G., ... & Schmitz, N. (2013). Association of diabetes with anxiety: A systematic review and meta-analysis. *Journal of psychosomatic research, 74*(2), 89-99.

Snoek, F. J., & Skinner, T. C. (Eds.). (2007). *Psychology in diabetes care* (Vol. 13). John Wiley & Sons.

Surwit, R. S., Feinglos, M. N., & Scovern, A. W. (1983). Diabetes and behavior: A paradigm for health psychology. *American Psychologist, 38*(3), 255.

Sultan, S., Luminet, O., & Hartemann, A. (2010). Cognitive and anxiety symptoms in screening for clinical depression in diabetes A systematic examination of diagnostic performances of the HADS and BDI-SF. *Journal of affective disorders, 123*(1), 332-336.