

THE IMPACT OF PSYCHOLOGICAL INTERVENTIONS ON THE QUALITY OF LIFE OF DIABETES MELLITUS PATIENT

Dana Sonia Oieru^{1,✉}, Amarin Remus Popa², Ionuț Vlad³

¹ The Doctoral School of the University of Oradea, Faculty of Medicine

² University of Oradea, Faculty of Medicine

³ The Doctoral School of the University of Oradea, Faculty of Medicine

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Abstract

Background and aims: The theory regarding the psychological factors as etiologic agents that trigger the somatic diseases has gained more and more ground in the past few years, successfully repeating that the human being is a bio-psycho-social entity. In order to render the psychological interventions more efficient in the management of the psychosomatic diseases, this research aims to detect and modify, even treat through psychological interventions those configurations of the early maladaptive schemes and coping styles that stick form together in the so-called acquired vulnerability which makes the person liable to an inappropriate reaction against stress, and also to track the effects of these changes on somatic indicators of diabetes mellitus. **Material and methods:** Analysis of variance (ANOVA) and paired T-test were used for analysing subjects' responses at three psychological instruments, evolution of blood pressure, body mass index, drug units, hospitalisation days, medical leave days, depressive symptoms before and after 10-12 psychological interventions sessions. **Results:** Results draw the attention once again upon the multiple directions of intervention and especially of prevention in case of the psychosomatic disease, in particular diabetes mellitus. **Conclusions:** Psychological intervention in the early stages of diabetes is a major contributor to the management of this disease.

key words: acquired vulnerability, coping style, overinvested coping mechanism or underinvested coping mechanism, adaptive weakness, psychological intervention.

Background and aims

A great number of papers was dedicated to the mood-based psychosomatic diseases and the role of negative affectivity (NA) [1-3]. The subjects with NA show a high level of discomfort and dissatisfaction, are introspective, linger upon their failures and mistakes, tend to be negative, focusing on the negative aspects of

themselves and of the others. Negative affectivity has similar features with other dispositional typologies, such as neuroticism, anxiety, pessimism, maladaptation.

Positive affectivity would be the contrary of the negative one, associated with extraversion, higher energetic level, superior activity level. Very recently, researches showed that individuals with intense negative affectivity

seem to be hypervigilant with their own bodies and have a low threshold when it comes to notice and report discrete somatic sensations. Their pessimistic worldview makes them more concerned about the implications of the situations perceived and they seem to have a higher risk for somatization and hypochondria. These individuals are more likely to report symptoms in all the situations and across long periods of time, the temporary situational stressors having but a small influence upon this stable personality trait. Negative affectivity is one of the problems that influences both the assessment of symptoms description and the clinical and research studies [4-10].

In the past years the psychosomatic approaches have gained ground. Among others, they highlight the role of the immunogenic personality traits – locus of control, self-efficacy, hardiness, self-esteem – in triggering certain diseases. The term “*locus of control*” was introduced in 1966 and named “the way in which a person explains their success or failure, through controllable or uncontrollable internal or external causes.” Internal locus of control (ILC) means that both responsibility for the errors and merit for success are due more to the flaws, errors and respectively to the abilities, knowledge and skills of the person, and less to the external factors; external locus of control (ELC) overestimates the importance of the person’s external factors (chance, destiny, divinity etc) in defining success or failure [11-13]. Starting from these two categories of locus of control, there are attempts to make inferences to the efficacy of coping [14]. Thus, ILC would function as a protection in case of acute and chronic stress through the increased level of responsiveness to the environmental information that has great adaptive value, through resistance to external pressure and the high level of adaptation to the situation [15].

Other authors think that personal responsibility configured in ILC is an important factor in social medicine. Correlatively, ELC is a vulnerability factor to dissatisfaction and failure, leading frequently to anxiety and depression [16].

Self-efficacy consists of a person’s belief that they have certain motivational and cognitive skills they can activate to accomplish the planned goals. High self-efficacy is associated with high motivation and increase of the individual’s real possibilities to find the best solutions, while low self-efficacy is associated with failure, self-blame, depression and anxiety [17-20]. Moreover, there are researches showing direct proportion between self-efficacy and the performance of the immune system, and especially of T cells, NK subpopulation [2].

Hardiness directly refers to the efficacy of coping mechanisms through ILC, commitment and persistence to a task and perception of life changes as a challenge, not a fatality.

Self-esteem has been defined as a person’s positive or negative self-assessment, expressed through different degrees of approval/disapproval, showing the measure to which the person sees herself as being able, worthy, important. Starting from the hierarchical model of self-esteem, it is postulated that, besides the global self-esteem, we can identify the assessment of one’s own value in different fields of activities. Depending on the hierarchy and, respectively, the importance of those fields for defining the self, they contribute with different weight values to structuring and expressing the overall self-esteem. Success raises the levels of self-evaluation and personal value, therefore, of the self-esteem, while the failure lowers these levels. Low self-esteem is part of a negative affectivity, where negative expectations lead to low performances and failures. These in their turn have negative effect upon the level of self-esteem. In stressful

situations, persons with anxiety and low self-esteem may have less success and can therefore experience feelings of failure.

For this purpose, we also speak about psychological vulnerability to stress and identify individuals with cognitive patterns that make them more sensitive to stress; the cognitive pattern reflects dependence on achievements or external sources of expressing the way in which the individual makes a self-assessment. Such dependence upon concrete achievements or other individuals for self-assessment is opposed to the idea that states the role of the character and inborn qualities, and makes the sense of self-worth vulnerable to the others' whimsical mood or life's hardships. Psychological vulnerability emphasizes the cognitive vulnerability correlated with the perceptions of dependence, perfectionism, negative attributions and the need for external sources of approval [21-23].

Psychosocial researchers looked for different connections between the cognitive vulnerability and the psychological crisis, namely the depression. A group of variable personality traits that were investigated as specific vulnerability factors to depression included dependence, self-blame, perfectionism and dysfunctional attributions. The self-oriented perfectionism and the concerns about the individual achievements were the focus of many studies regarding vulnerability to depression.

For individuals with excessive concern for achievement, the failure recorded in comparison with important accomplishments may be an overwhelming blow leading to depression. Dependence and interpersonal sensitivity were also the focus of some researchers who found out that individuals with high score in sociotropy (or social dependence) recorded a high score in measuring the self-defense personality traits and had a more important negative perception of themselves, the world and the future. It is

speculated that threats to relations may be an important source for depression in this category of subjects. Other examiners focused on the role of dysfunctional attitudes (negative, rigid thinking and mostly negative perception of self, the world and the future) in the development of depression.

In psychology, stress aims at dysfunctional psychological moods caused by the difficulties the individuals have to face, while the coping aims at the mechanisms and means they have at hand in order to manage these problems. Coping or stress management consists in the cognitive and behavioural effort the person makes to decrease, control or tolerate the internal or external demands which exceed the personal resources; it takes place in three stages: anticipation (warning), confrontation (impact) and postconfrontation. Coping is a response to a threat appraisal, being defined as a set of cognitive and behavioural efforts to manage the specific internal and/or external demands that were assessed as exhausting or exceeding the individual's resources [24-29].

The research aims to highlight the role that psychological intervention has in diabetes mellitus management, especially in the first year of disease onset. Changes targeted by cognitive and behavioral psychological interventions relates mainly to a modification of coping mechanisms, early maladaptive schemas and personality traits vulnerable to disease.

Material and methods

This study was conducted over a period of approximately two years (april 2011-may 2013). Participants had diabetes with a relatively recent onset (up to 2 years ago) and as the most frequently comorbid HPB, obesity and anxiety and depressive disorders. 72 of patients were receiving oral antidiabetics (Siofor, Silubin retard, Diaprel, Amaryl) and 42 were insulin.

Entitlements in batch inclusion criteria were the existence of at least one comorbidity besides diabetes and onset of less than two years and no comorbidities and retirement exclusion on sickness due to diabetes. The patients in the experimental group (114 subjects – 78 male and 36 female, 27-49 years old, (average 42,6 years old) benefited from 10-12 cognitive-behavioral therapy (CBT) and schema therapy sessions [30-37] during 3-4 months, unlike the 120 ones (74 male, 46 female, 27-50 years old, average 47,2 years old) in the control group who followed only a drug-based treatment. The sessions took place in an individual setting, one session per week. Checking the stability in time of the effects of the psychological interventions was done on a period of 6 months through follow-up session, one per month. We accurately observed the variables that could contribute to the change of the final answers (events with major impact upon life, such as the change of job, partner, house, special loss/gain, etc).

The three psychological instruments used were: NEO PI-R – new model personality factors-revised (a personality inventory which reveals five personality factors – neuroticism, extroversion, likeability, openness and conscientiousness), COPE (from to cope- to manage a difficult situation, to face it on) by authors Lazarus and Folkman, which comprises 14 scales for measuring as many forms of coping that may be of a predominantly active or passive) and Young questionnaire cognitive schemas short form, consisting of 114 items identified eighteen maladaptive schemas grouped into five categories or domains.

The work hypothesis was that there are statistically significant differences (using T-test for significance paired groups and analysis of variance ANOVA from Statistical Package for Social Sciences - SPSS) between the two groups regarding the evolution of the quality of life,

illness behaviour and illness management of the diabetes mellitus patients after taking psychological interventions. Also, there are important changes in subjects' responses related to psychological vulnerability after taking psychological interventions, measured by three psychological instruments.

Results

Statistical analyses. The analysis of variance (ANOVA) and paired T-test for significance point out that the evolution of the quality of life of the diabetes mellitus patients that benefited from psychological interventions is a very good one, the changes being spectacular here and there, especially in the coping mechanisms and early maladaptive schemas, with other words in the acquired vulnerability. Significant changes were recorded as regards the answers at the personality inventory neo PI-R, the most obviously modified being the neuroticism factor ($p < .001$) (the anxiety, fury/hostility, depression, vulnerability to stress aspects have significantly smaller scores after cognitive-behavioral interventions) (Figure 1), the extroversion factor ($p < .001$) (the assertiveness and positive emotions aspects recorded significant growth) (Figure 2) and the likeability factor ($p < .005$) (by increasing the scores in reliability and frankness aspects) (Figure 3).

There were changes in responses at openness factor, but statistically insignificant (Figure 4) and insignificant changes in conscientiousness aspect.

The most spectacular changes ($p < .001$) occurred in the early maladaptive schemas (Figure 5) that significantly remitted after the psychotherapy session, as well as in the evolution of the coping mechanisms, ($p < .001$) (Figure 6) meaning the patients acquired more efficient methods of coping with stress.

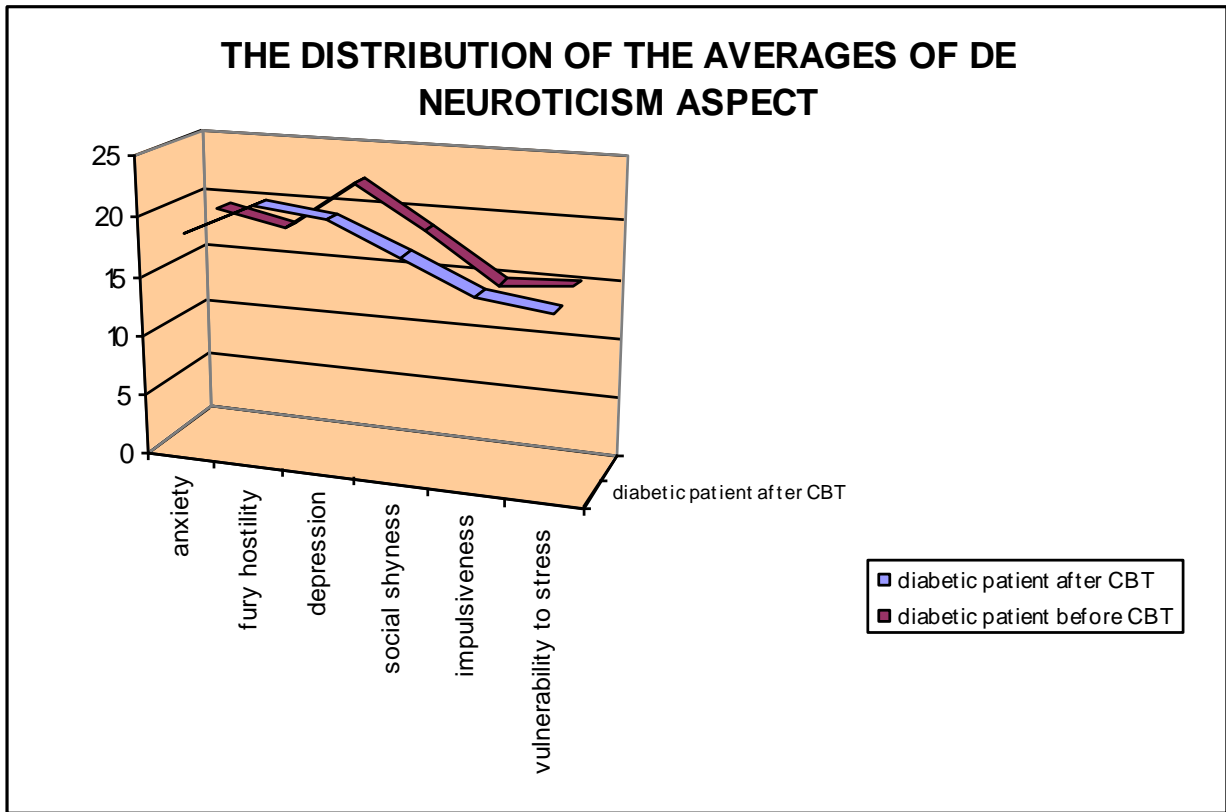


Figure 1. Distribution of the averages of the neuroticism aspect.

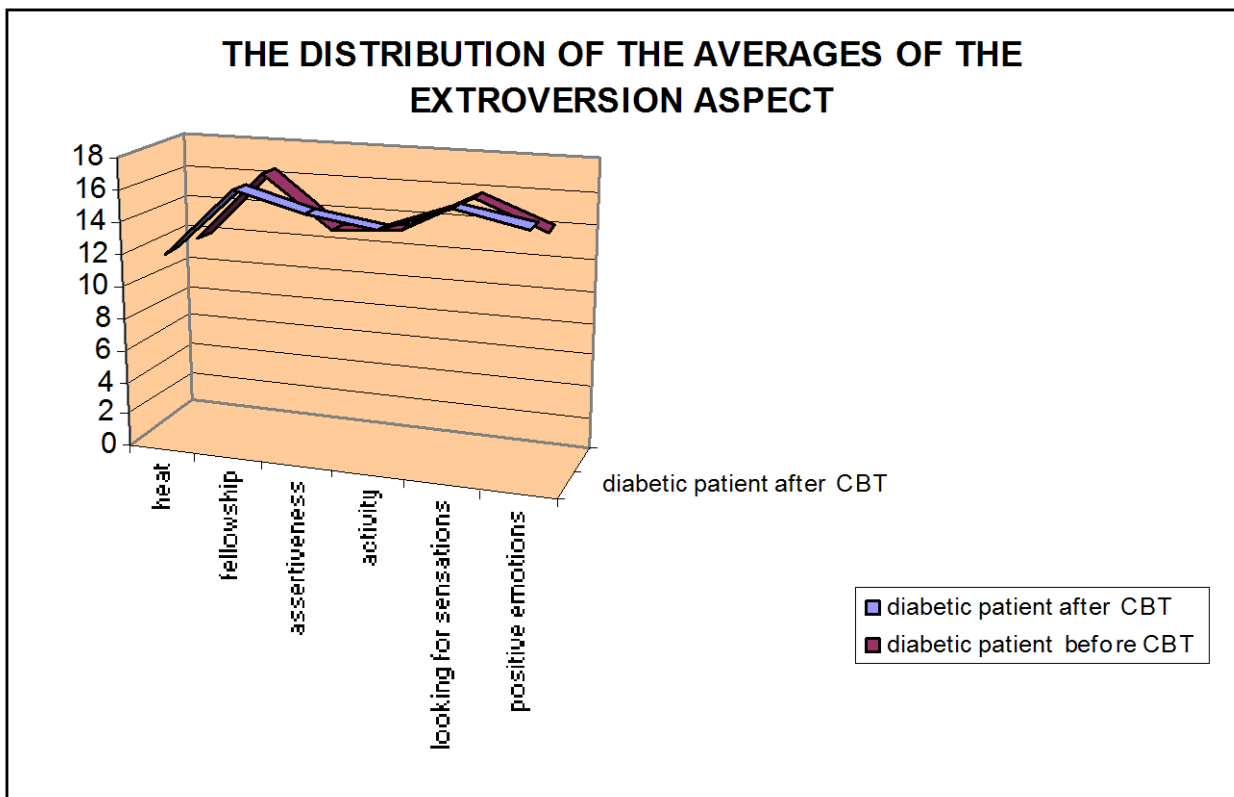


Figure 2. Distribution of the averages of the extroversion aspect.

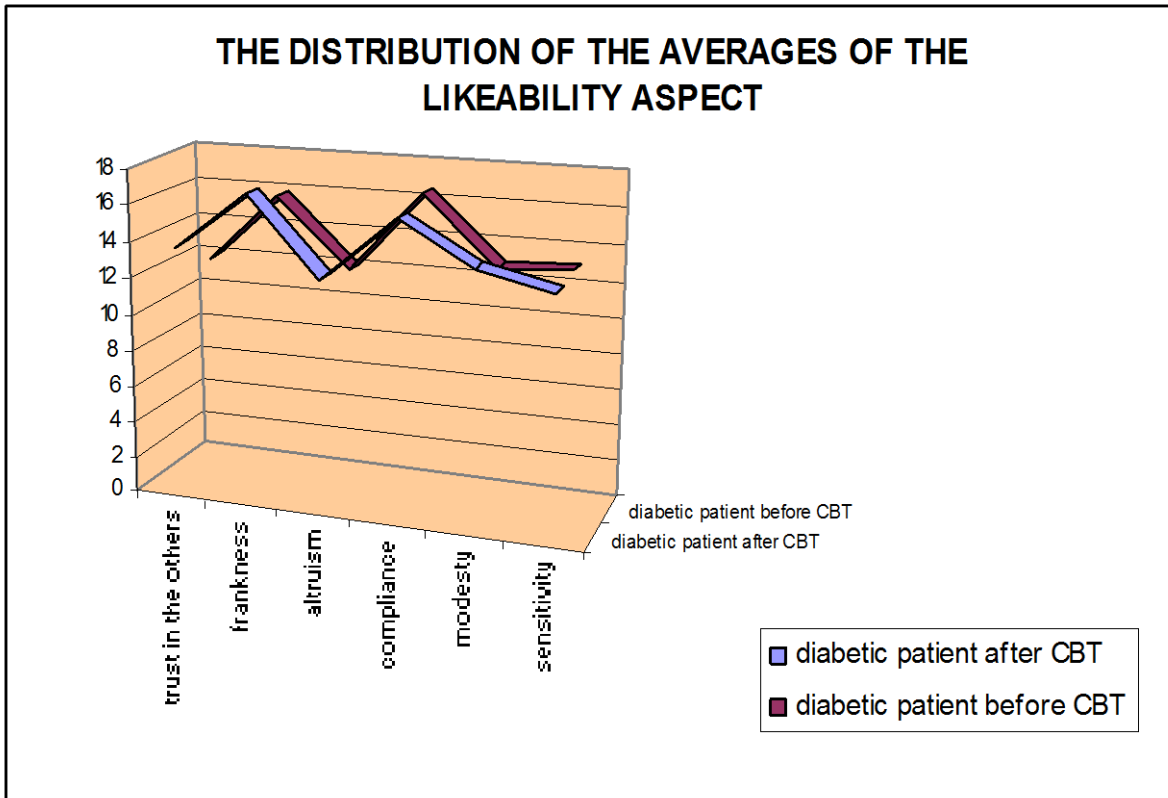


Figure 3. *The distribution of the averages of the likeability aspect.*

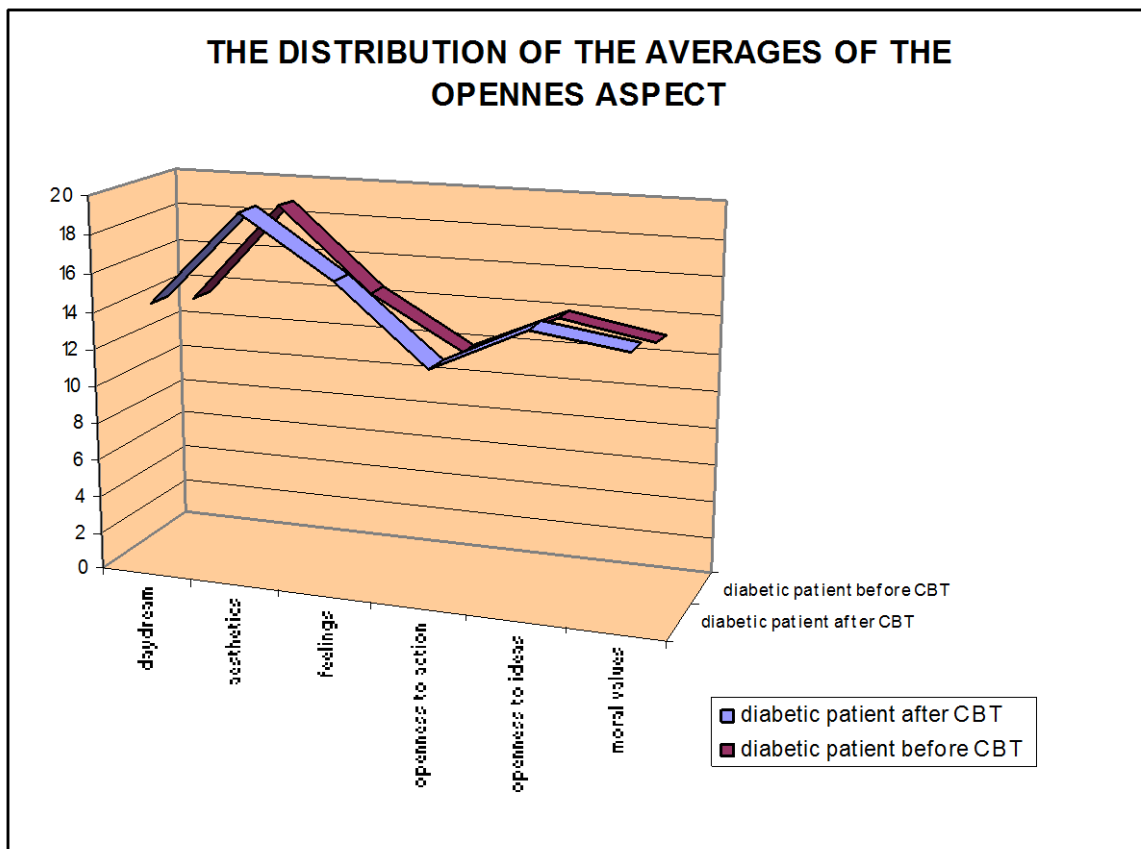


Figure 4. *The distribution of the averages of the openness aspect.*

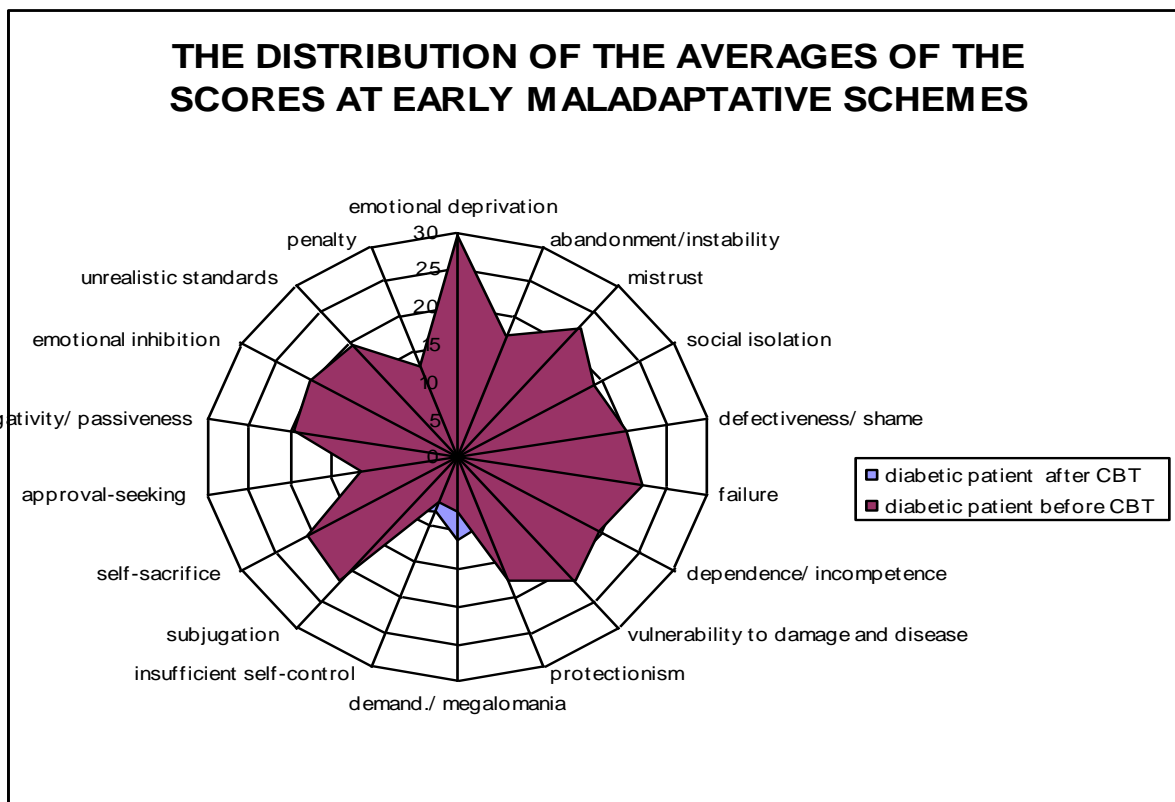


Figure 5. *The distribution of the averages of the early maladaptative schemes.*

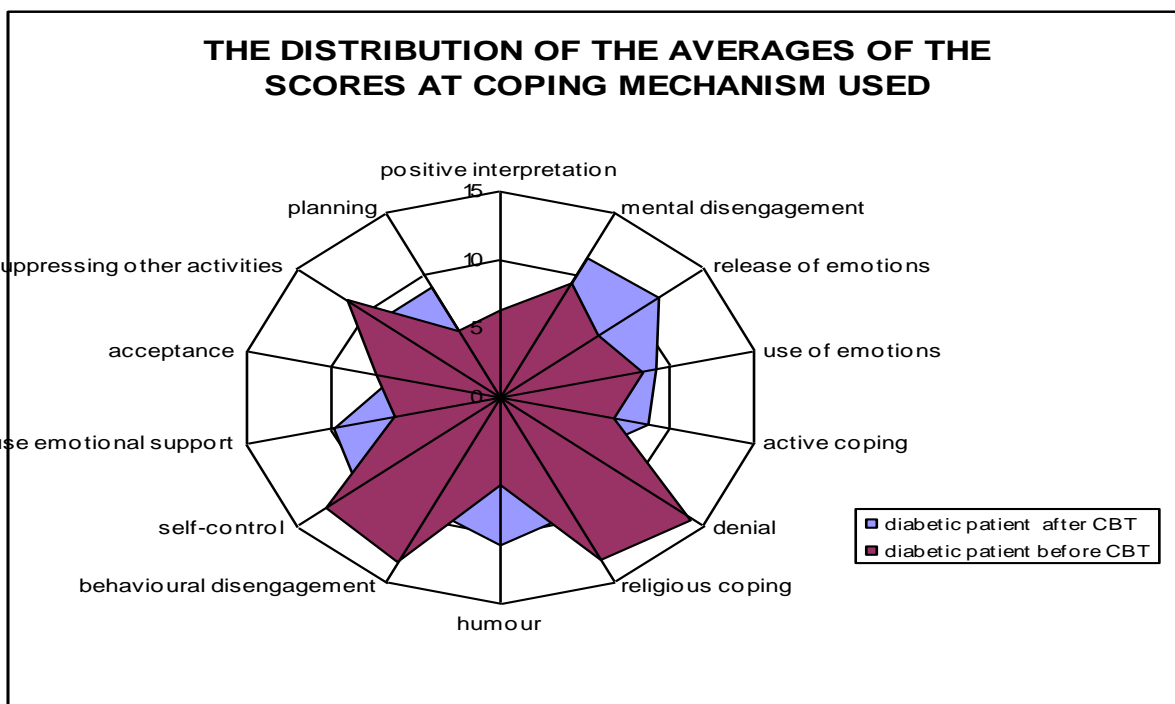


Figure 6. *The distribution of the averages of the scores at coping mechanism used.*

The patients` quality of life in the experimental group recorded remarkable positive changes by increasing the compliance with treatment, positively changing the perspective upon life, keeping the pace for adopting a healthy lifestyle, and by decreasing the dosage of

metformin by approximately 25% (Figure 7), or up to 30% of the insulin units administered in some cases (Figure 8) (from average 110 insulin units to average 75 insulin units).

hospitalization days for the treatment of the complications of diabetes (Figure 10) from average 38 days to average 21 days ($p < 0.001$) was observed.

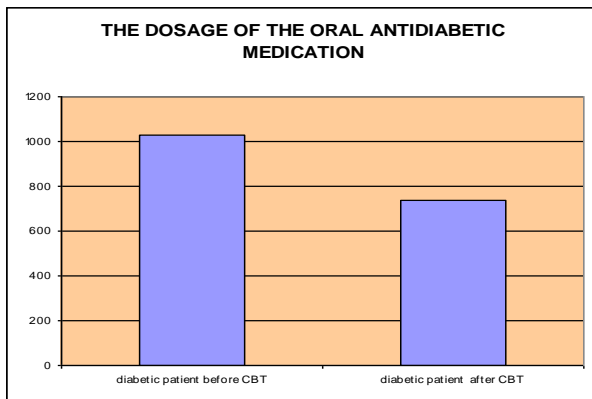


Figure 7. Evolution of the dosage of metformin.

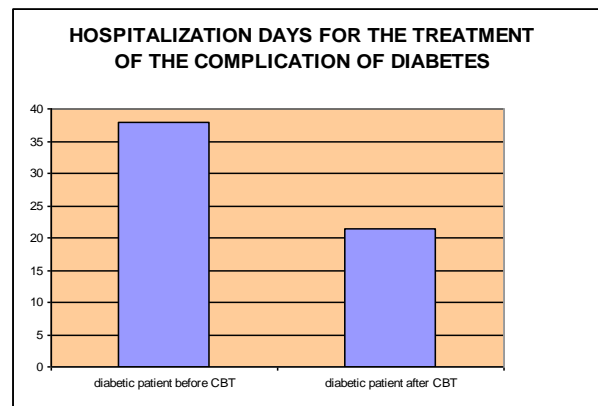


Figure 10. Hospitalization days for treatment of diabetes complications.

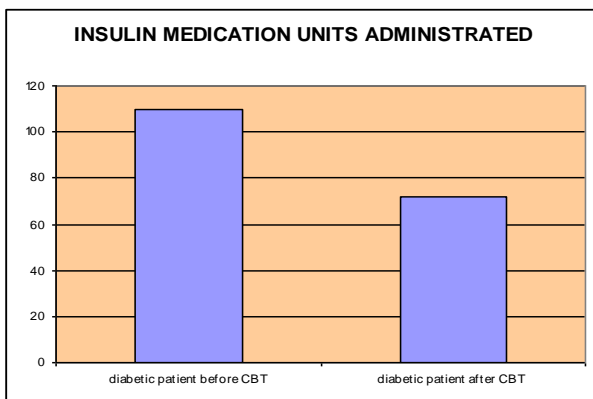


Figure 8. Evolution of the insulin medication units administered.

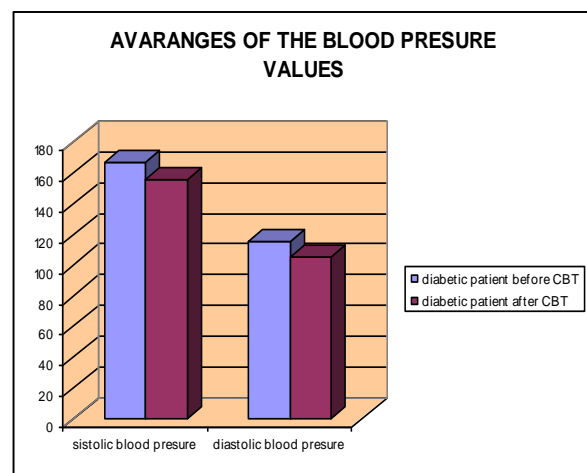


Figure 11. Averages of the blood pressure values.

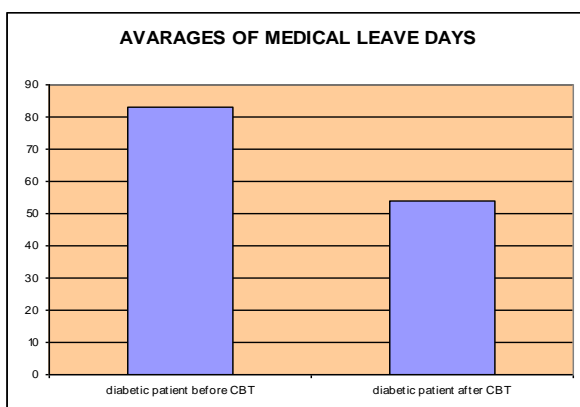


Figure 9. Averages of medical leave days.

A decrease by 35% of the medical leave days (Figure 9) from average 84 days to average 54 days ($p < 0.001$) and by 44% of the

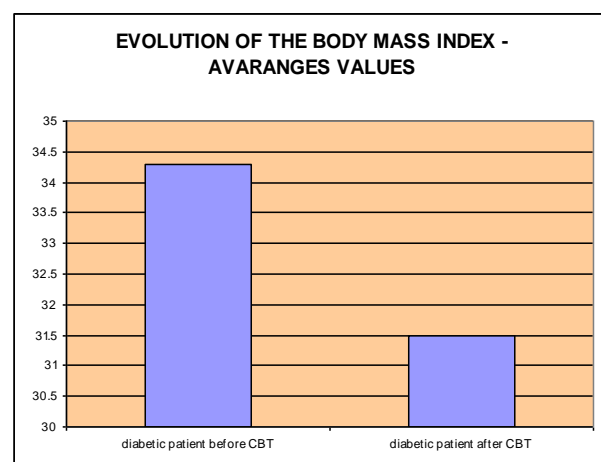


Figure 12. Evolution of BMI values.

The comorbidities were controlled by a decrease in depression and anxiety symptoms, a decrease of blood pressure (Figure 11) by 10.4 units on average for the systolic blood pressure and 10.1 for the diastolic blood pressure, and a decrease of the BMI from 34.3 to 31.5 on average ($\pm 0,3$ SD) ($p < .001$) (Figure 12). We mention that the quality of life was defined by the parameters listed in this section.

Discussions

The results of a past research led by same authors on diabetes mellitus patients emphasize the existence of a constitutive adaptive frailty given by the personality factors, and that of a vulnerability to stress acquired in early childhood. Thus, extroversion, openness and likeability offer a good prognosis of the health condition during lifetime, at least as regards the diabetes mellitus diseases. These traits are frequently associated with efficient coping mechanism, behavioral flexibility and a bit of frankness and impulsiveness that predispose to developing of the megalomania schemes, and possibly a somewhat limited capacity of self-control. On the other hand, those who can develop diabetes mellitus disease at maturity are more inhibited, introverted, negative, usually disqualify their emotions, are suspicious about people, anxious, they often feel frustrated, misunderstood, defective, inferior, leading to fury/hostility which they repress, however, for fear of not being rejected or excluded. They are defective regarding coping mechanisms, meaning they use a limited range of methods of facing stress, methods that might be efficient only on short term [38].

The same past research also emphasize a rigid overinvestment of the diabetic subject in less adaptive coping, or adaptive on short term at most, such as denial, religious coping, behavioral disengagement, excessive self-control

and suppressing other activities and a subinvestment in the long-term adaptive coping, activated especially by the healthy subjects: positive interpretation, mental disengagement, release of emotions, use of emotions, active coping, humour, planning, use of the emotional support. Another significant difference between the subjects of the two groups was in the number of the coping mechanism used, especially in stressful situations: the healthy subjects have greater adaptive flexibility, meaning they use 5 coping mechanisms on average, while the diabetic subjects use maximum 2 [38].

But this research emphasizes that psychological intervention diminishes, even dissolve psychological vulnerability to the disease, patients who received such interventions gave very similar responses to healthy patients.

There are some reserves to be placed under the generalization the results of this research hold by two selection biases of subjects: first - subjects had been diagnosed with diabetes in the last two years, and the second - subjects not resigned themselves to the disease, but exhibited a revolt against it and acute desire to intervene to change things in this direction.

Very special motivation of subjects to change their attitude towards the disease has functioned as a catalyst for changes in psychological and somatic after psychological intervention. Equally true is the fact that the disease's secondary benefit (retirement for disease, sparing of others, learned helplessness and passage of responsibilities and so on) can be a serious brake in engaging patients in therapeutic change, and thus in an appropriate management disease.

Conclusions

These results draw the attention once again upon the multiple directions of intervention and especially of prevention in case of the

psychosomatic disease, in particular for diabetes mellitus, the cognitive - behavioral interventions, the schema therapy or the rational emotive behaviour therapy, foretelling the numerous ways of annulment, control or decrease of the psychical vulnerability to stress, that have major impact upon life. Holistic bio-psycho-social

approach increases the efficiency of drug treatment by increasing patient compliance to treatment, reduces labeling catastrophic illness, reduces the appearance of comorbidities and turns the patient into an active member of the health team.

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