
Psychodiabetic Kit and Its Application in Clinical Practice and Research

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1. Introduction

A patient-centered approach is recommended for the management of diabetes type 2 by the American Diabetes Association and the European Association for the Study of Diabetes [1] “These recommendations should be considered within the context of the needs, preferences, and tolerances of each patient; individualization of treatment is the cornerstone of success. (...). The implementation of these guidelines will require thoughtful clinicians to integrate current evidence with other constraints and imperatives in the context of patient-specific factors” [1. p. 1364]. It includes taking into consideration the variable and progressive nature of type 2 diabetes, the specific role of each drug, the patient and disease factors that drive clinical decision making, and the constraints imposed by age and comorbidity. This implies diagnosis of psychosocial factors in regular medical practice. This is justified by sterling data indicating that psychosocial factors have meaningful impact on the management of diabetes. There is extensive literature suggesting that the patient’s mental state has a profound impact on adherence to medical recommendations [2] and influences the course of the disease. Major diabetic problems are more widespread among patients with clinical depression, than those with subthreshold depression [3]. On the other hand, depression is more common among people with diabetes than in general population [4], and even in its subclinical form, it increases the risk of complications [5]. Research points to a link between the intensity of diabetes treatment and the occurrence of depressive mood [2]. It also indicates that the course of the disease affects the patient’s ability to cope with stressful situations [6] and sense of control over the disease [7]. Many conducted studies reveal the importance of psychosocial factors in diabetes self-care. Diabetes-related emotional distress is connected with difficulties with diabetes self-management and poor glycemic control [8]. Self-efficacy and problem solving

were associated with self-management behaviors like healthy eating and physical activity [9]. It is known that patients understand the importance of diabetes management and the consequences of bad metabolic control. Their poor control results not from a lack of knowledge but on the way diabetes is prioritised in their lives [10]. There is evidence that diabetes management is strongly influenced by psychosocial factors [11]. This implies the necessity of inclusion of diagnosis of psychological and psychotherapeutic factors during a routine visit of patients with diabetes. Team approach in this management, including diabetologist, nurse, psychologist, educator, and social worker is optimal. However, in many countries significant rates of outpatient clinics can offer their patients therapeutic interventions made only by doctors and the nurses. Working in such setting they need diagnostic and therapeutic tools helpful in management of psychosocial problems related with diabetes. However, the number of tools that are useful in such conditions is limited. The computerized assessment tool "Monitoring of Individual Needs in persons with Diabetes" (MIND) [12,13] includes World Health Organization's Five Well-being index (WHO-5) [14,15], Problem Areas In Diabetes (PAID) [16-18], life events and patient's agenda, can be used for diagnosis of psychosocial factors connected to diabetes management. Analysis of data from the cross-national Diabetes Attitudes Wishes and Needs (DAWN) MIND study, conducted in 8 countries, also in our center in Poland, confirmed that "MIND" computer procedure is feasible as a part of ongoing diabetes care and helps to identify unmet psychosocial needs in diabetes patients. However it does not help in psychotherapeutic diagnosis that is needed for the basic psychotherapeutic interventions that can be made by doctors during a regular visit [12,13]. The psychodiabetic KIT was elaborated in response to such needs. The analysis of literature in MEDLINE and PUBMED indicates that there are no concise comprehensive diagnostic tools for supporting psychotherapeutic diagnosis during the regular medical visit of patients with diabetes and there are no simple psychotherapeutic strategies of interventions in such a setting. Psychodiabetic KIT supports a diagnosis of coping styles, perception of self-influence on diabetes course and a more reliable diagnosis of depression and anxiety, than the one WHO-5 and PAID used as screening tools for depression. In this chapter we describe: a theoretical rationale of the Psychodiabetic Kit, three tools that it comprises together with "The Practical Schema of Psychotherapeutic Management within a Regular Medical Visit" as well as a review of research confirming its usefulness both in research and clinical practice.

2. Rationale of psychodiabetic KIT

Improvement of patients' adherence to the optimum management of diabetes may be considered as the target of psychotherapeutic interventions during medical visits, when education about the diabetes is not efficient. The theoretical framework of psychotherapeutic diagnosis and interventions should be easy to understand for both therapists and patients. It was presumed that due to the common time constraints the diagnostic tools should:

1. be brief
2. compromise goals of enhancing psychological thinking and psychometric proprieties
3. rather support the clinical psychological diagnosis, than replace it

4. promote psychological understanding both of the patient and of the therapist
5. integrate the psychological diagnosis and interventions with the regular clinical management

Eventually the concept of coping with stress was chosen as theoretical background for the diagnosis. Whereas the practical interventions following the recommendations of the International Diabetes Association [19] are based on philosophy of empowerment, and rule self-management [19,20], that applies elements of behavioral therapy.

The concept of coping with stress related with diabetes and perception of self-influence on the diabetes course

Coping is defined as 'constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person [21]. Coping is an adaptation activity that involves effort and aims to diminish the physical, emotional, and psychological burden linked to stressful life events [22]. However, the outcome of the coping process can also be maladaptation. The dispositional traits that influence how stressful events are assessed and that consequently determine the strategies a person uses to manage or address a stressor, may be described as coping strategies. Endler and Parker [23] offered simple classification of coping styles: task-oriented, emotion-oriented and avoidance-oriented. Patients utilizing an emotion-oriented strategy try to process reactions to stressor(s) by acting and thinking and in this scenario the person is focused on the emotion evoked by the stressor; overall, efforts are directed at altering the emotional responses. Patients who use a task-oriented strategy believe that they can prevail the situation caused by their disease or that they can adapt their resources to manage the situation, which often involves taking direct action to alter the situation itself. An avoidance-oriented coping style includes strategies such as avoiding a situation, denying its existence, or losing hope, via conscious and/or unconscious mechanisms; when using this coping style, the person also uses indirect efforts to adjust to stressors by distancing them, evading the problem, or engaging in unrelated activities to reduce feelings of stress. In addition to emotion-, task-, and avoidance-orientated, "the best solution oriented coping" style has been described [24]. When engaging in the 'identifying the best solution' coping style, the person actively searches for the most effective solutions, taking into account that they may be more "expensive" and risky than the standard ones. The classification of coping styles into just four main categories simplifies the understanding of these behaviors for both doctors and their patients. The concept of stress introduced by Seyle [25,26] is commonly known, unlike its most important developments dealing with the intensity of reactions to stressful events, that depends on [27] :

1. How the challenge is evaluated, what's its meaning for the individual
2. Which coping style is used
3. What the level of social support is

Analysis of literature reveals a close relationship between an individual's overall psychological disposition and the cognitive and emotional aspects of their illness-coping strategies, which indirectly affect health-seeking behaviors [28]. According to the goodness of fit hypothesis, the effectiveness of problem- versus emotion-focused coping is moderated by appraisal of control

over the stressful event [21,29]. The application of a problem-oriented coping style requires a feeling of control over the stressor, while in situations where there is an actual or perceived lack of control, an emotion-oriented or avoidance oriented coping style is applied. This concept has received some empirical support in a study involving patients with type 2 diabetes mellitus (T2DM) [30].

Indeed, among the variety of psychological factors described, the coping style and the perception of control over the disease course seem to have an important effect on outcomes in patients with diabetes [31,32]. Thus it is also likely that, in terms of coping strategies used to deal with diabetes, the individual's appraisal of illness as controllable or uncontrollable plays a role in the choice of strategy and therefore, ultimately, also in illness-associated outcomes.

In long-term progressive diseases, the concept of control is misleading because, in the majority of cases, even total adherence to the recommended treatment regimen can not guarantee restraining of either disease progress or recurrence of acute symptoms [7]. Perception of self-influence on a disease course can be defined as the extent of belief about one's own abilities to shape the disease course. It was formulated in response to data indicating that the coping style applied in response to a particular stressor is dependent on the perceived degree of control over that stressor [7]. As such, the concept of perceived self-influence on the disease course may be a more appropriate notion than control, when considering long-term progressive diseases, as even with chronic diseases, adherence to the recommended treatment and management plan can modify the disease course. Self influence also differs from perceived self-efficacy, which is defined as beliefs about the capabilities to produce designated levels of performance that exercise influence over events that affect lives. More specifically, self-efficacy beliefs determine how people feel, think, behave and motivate themselves [28], while perception of self-influence is related to disease management and is therefore more precise. Indeed, perceived control of diabetes was found to be a significant predictor of engagement in diabetes-specific health behaviors and positive perception of quality of life [31,32].

2.1. Depression and anxiety

Research analysis points to a high prevalence of depressive symptoms in a population of patients with diabetes [4,33]. Depression and its subclinical forms are connected to a negative course of diabetes. Depression is linked with poorer glycaemic control [34]. Research confirms higher mortality in those groups of patients, in which major or moderate depression was diagnosed, when compared to a group in which depression was not found [35]. Moreover, patients reporting higher intensity of depressive symptoms are less willing to talk to their doctor about self-care [36]. Authors of the recent study, point that doctors need to be careful for depressive symptoms in their patients, and suggests the usefulness of brief diagnostic tools that may be used during a routine visit.

A higher prevalence of anxiety disorders and significant intensity of anxiety symptoms can also be observed among patients with diabetes [37,38]. The occurrence of those symptoms is connected to a poorer quality of life in diabetes patients [39]. The referred studies justify the purposefulness of evaluating depression and anxiety in patients with diabetes.

2.2. Description of the psychodiabetic KIT

Psychodiabetic KIT is a concise method of psychotherapeutic diagnosis and interventions aiming at improving the patient's adherence to therapeutic regimen. It was comprehensively described in a series of manuals [40-44] widely distributed among Polish diabetologists. Its application was discussed during many workshops. The Psychodiabetic Kit consists of:

1. Brief Methods of Evaluating Coping with Disease;
2. Brief Measure to Assess Perception of Self-Influence on the Disease Course: Version for Diabetes;
3. Brief Self-Rating Scale of Depression and Anxiety;
4. The Practical Schema of Psychotherapeutic Management within a Regular Medical Visit

The Brief Method of Evaluating Coping with Disease (BMECD; published in the appendix) [24] was created to assess the main four coping styles factors, which were mentioned above. This questionnaire consists of four questions with a choice of four behaviors. Each response relates to one of four distinguished coping styles related to aspects of life that are important for patients with diabetes (interpersonal, social, economic, and health related matters). The four BMECD questions are an outcome of a focus group interview with patients with T2DM who, in the opinion of their doctors, had developed either adaptive or maladaptive styles in order to cope with their disease. Data from the focus group were used by psychology students working on their Masters theses to generate 16 questions that related to typical methods of dealing with stressful situations according to each of the four main established coping styles. These 16 questions were correlated with the scores of the Coping Inventory for Stressful Situations (CISS) [45], the choice of the final four items was based on these results and on the opinion of two experienced clinical psychologists from the Medical University of Warsaw. Due to clinical observations indicating gender difficulties in perception and interpretation of some examples used in the questionnaire, which resulted in the reliability not being as satisfying as expected, the final version of BMECD [6] was elaborated. The changes included the descriptions of stressful situations adjusted to gender and to Polish language spelling by creating separate versions for males and females, and to making the test easier to read. The gender adjusted version has a relatively good reliability, as for an only four item questionnaire, designed for screening for maladaptive coping and as for an educational tool. Cronbach's $\alpha = 0.67$ for avoidance oriented coping style; 0.68 for emotion oriented style; 0.75 for task oriented style; 0.59 for the best solution oriented style in the male version and respectively: 0.65 ; 0.67 ; 0.71 ; 0.55 in female version. The validity of the BMECD was assessed with the Polish version of the CISS questionnaire [45] among 125 women and 104 men only. The strongest correlations were found between: found between task-oriented coping style in CISS and combined results for the task oriented and the best-solution oriented coping style in BMECD among women ($r = 0.42$; $p < 0.001$) among men ($r = 0.41$; $p < 0.001$) and between scores in the emotion oriented coping ($r=0.29$; $p < 0.001$ both for men and women). There were no significant correlations between scores in avoidance oriented coping styles in both measures, both in group men and women. Those correlations indicate that the coping styles identified in BMECD have some similarities with those differentiated by CISS, but measure different modes of reaction to stressful events.

The Brief Measure to Assess Perception of Self-Influence on the Disease Course: Version for Diabetes (BMAPS-IDC, published in the appendix)[7]. The BMAPS-IDC questions were developed based on methodology that was discussed during a focus group interview with patients with T2DM who, in the opinion of their doctors, had developed either adaptive or maladaptive styles in order to cope with their disease. This led to the originating of 50 items, each using a 5-point Likert scale to assess outcomes. These 50 items were then modified following a discussion with two persons with diabetes. To further validate the 50-item version of the BMAPS-IDC, the questionnaire was used among 170 patients, in whom their doctor, using clinical judgment, rated the patient's perception of self-influence on the diabetes course.

Statistical analysis (Wald test and logistic regression) identified six items that optimally differentiated the group in terms of high and low perception of self-influence on the disease course; thus, the final BMAPS-IDC questionnaire consisted of six items, each presented using a 5-point Likert scale. Higher BMAPS-IDC scores denote a greater perception of self-influence over the disease course.

The BMAPS-IDC has good reliability (Cronbach's alpha, 0.75) and acceptable validity (Kendall tau, 0.54), as well as a standardized ten scale for the assessment of results, which was created to describe clinically significant differences. According to the ten scale, low raw scores of 0–11 scores correspond with <5 on the ten scale, average raw scores of 12–15 correspond to ten scale scores of 5–6, and high raw scores of 16–24 of translate to 7–10 on the ten scale. There were no meaningful gender differences in scores on this scale. In a study among 655 females and 544 males the mean score in BMAPS-IDC was 14.88 (SD=4.332) and 14.11 (SD = 4.348) respectively. This difference was statistically significant $t = -3.04$, $df=1193$, $p = 0.002$, but was not clinically significant [46].

A Brief Self-Rating Scale of Depression and Anxiety (BS-RSDA) [47]. It is a short method for evaluating the intensity of depression and anxiety symptoms, developed with norms for patients with diabetes. It consists of 10 items with an 11 degree Likert scale (from 0 to 10). The overall score therefore falls somewhere between 0 to 100. 5 questions fall in the depression category, 5 into the anxiety one (the result is from 0 to 50 for each of the scales). Construction of these scales was based on most significant psychopathological symptoms characteristic for depression in both classifications – DSM-IV and ICD 10. In the depression scale the following factors were developed: mood, intensity of energy, strength of interests, ability to feel pleasure, speed of thought and action. They constitute elements of depression episode and might appear in other depressive disorders. In case of anxiety there are many categories of anxiety disorders. For the evaluation of anxiety symptoms, the following factors were included: 1. worry, tension, uneasiness; 2. anxiety or fear of specific threat; 3. apprehension, distress; 4. physical tension; 5. desire to avoid situations that cause anxiety.

The tool has good psychometric properties, evaluated on the basis of a study conducted on 240 respondents – patients with diabetes. Both scales proved to have good reliability, the Cronbach's alpha was 0.95 for depression and 0.94 for anxiety. Both scales were also found to be valid. The depression scale correlated with the results of Beck Depression Inventory ($r=0.809$) and the HADS Depression Scale ($r=0.797$). The anxiety scale correlated with the results of HADS Anxiety Scale ($r=0.805$). Reliability of the entire scale was also high (Cronbach's alpha=0.956). Because of the lack of a reference tool, the validity of the whole scale was not

measured. High reliability of the subscales was replicated in a study among 101 persons with diabetes: Cronbach's alpha was 0.92 for the depression scale and 0.91 for the anxiety scale. In the study among 133 persons with cardiologic and orthopedic disease in the test-retest reliability measurement, after 30 minutes, the correlation of subscale scores for depression was $r=0.845$, and for the subscale of anxiety $r=0.814$

A temporary ten norm scales were developed, and the analysis of relations of the BS-RSDA scores and diagnosis of depression with structured interview indicated that results of depression subscale >11 have sensitivity for detection of depression that is 0.886 and specificity that is 0.727.

2.3. The practical schema of psychotherapeutic management within a regular medical visit [40,44,48]

The schema was created in order to help doctors in making basic psychotherapeutic interventions during the regular visit. Its application was encouraged by series of workshops for doctors treating diabetes in Poland, however it may be used without the training. The main goals of this intervention is helping patients in the stressful problems related with diabetes. The diagnosis focuses on the assessment and practical teaching patients about coping mechanisms, perception of self-influence on the diabetes course and development of patient abilities of problem-solving and use of coping task oriented and "the best solution oriented" coping styles. It eventually broadens the range of behaviors aiming at problem solving. This is congruent with self-management with diabetes based on empowerment. The study [49] shows that a mere transfer of information between the doctor and the patient (regarding the disease and the proposed treatment) does not ensure satisfactory results in terms of the outcome of treatment and the patient's adherence to medical recommendations. An improvement on the doctor-patient relationship has been suggested, basing on the tenets of cognitive behavioral therapy. The traditional model in which the health-care provider is the 'expert' to be consulted by the 'patient' has been replaced by a partnership in which both parties cooperate to achieve best results. In this approach, the patient is the central figure and – acknowledged to be an expert in his/her problematic symptoms - becomes an active member of his/her disease management team. The role of the therapist, on the other hand, is to assist the patient in this process. One of the methods which can be employed by the therapist is the Socratic method in the form of Socratic dialog that enables the patient to determine the problem areas and to guide them to make decisions regarding the course of treatment. Instead of offering ready solutions the therapist is required to guide the patient to work out the solutions to their problems. Thus the patients are empowered to use their own initiative, which shifts the locus of control closer to them and motivates them to effectively manage their own care leading to significant improvements in healthy behavior. In order to achieve this, cognitive behavioral therapy recommends the method of "small steps" whereby the patient is encouraged to make gradual alterations in their habits rather than introduce radical changes. Even modest results serve as positive reinforcement and motivate further efforts. The Schema consists of the following steps:

1. Welcoming and establishing contact.

- doctor’s warm attitude towards the patient
- giving the patient a chance to say what he/she really wants to say
- It is crucial that the doctor establishes good contact with the patient so that the patient feels comfortable enough to confide in the doctor.

2. Discussing the implementation of the last homework.

- realistic estimation of achievements
- realistic estimation of difficulties

When assessing the degree to which the patient succeeded in complying with the doctor’s recommendations it is important to ask open questions so as not to exert pressure on the patient or make them feel examined. In order to empower the patient, the doctor needs to appreciate any effort on the part of the patient and analyze any difficulties with which they may be struggling.

3. Setting the goals of the present visit

- asking the patient what he/she would most like to discuss
- in case of problems with making the choices:
 - placing the possible goals in order,
 - dividing very difficult goals into smaller ones (“step-by-step” approach)
- in case of serious problems in everyday life - adjusting the therapeutic goals to the to this circumstances

The goal which the patient is to pursue, ought to be realistic, specific (clearly defined) and measurable. In establishing the goal, the patient’s current problems need to be considered, including non-medical ones, and assess their impact on the illness. If it is needed, the doctor is recommended to suggest taking small steps, which means breaking the goal down into smaller, more achievable goals. This will enhance the chances of success.

4. Medical examination

- adjustment of the set up goals to an outcome of the medical examination and conducting the required diagnostic procedure

The goals need to be established in the context of the patient’s general condition. Only after examining the patient appropriate steps can be set.

5. A brief medical psychotherapeutic diagnosis

- screening for depression and anxiety

It may be made with A Brief Self-Rating Scale of Depression and Anxiety or any other diagnostic tool. The patients identified with risk of depressive disorders or anxiety disorders should be referred for a psychiatric consultation.

- dominating style of coping with stress related with the disease

- the feeling of the influence on the course of the disease

The coping style and perception of self-influence on the diabetes course may be made with use of aforementioned. The physician needs to assess how ready the patient is to introduce changes in his/her lifestyle, how strongly he/she believes in the positive outcome of the changes and to what degree the patient feels he/she has the perception of self-influence on a particular problem.

6. Socratic dialog leading to a realistic evaluation of the main problem's source and its possible solutions

- assessment of the problem in the context of general life situation

–formulation of possible solutions

- assessment of advantages and disadvantages of possible solutions

Asking the patient a series of questions enables him/her to determine the source of the problem and to seek the most suitable solution. Since the patient is encouraged to use their own initiative, they will more strongly believe in their ability to achieve their goals.

7. Setting the realistic homework for the period prior to the next visit.

- “small steps” that have good chance for successful outcomes

- defining the criteria of the outcome estimation

- formulating actions that will be taken in case of serious problems with conducting homework

On the basis of the information gathered during the visit, the doctor is recommended to work out a list of recommendations to be implemented by the patient after the visit. It is important to consider any foreseeable difficulties and discuss the means to overcome them.

8. Recapitulation of the visit by the patient

- what are the conclusions of the discussion

- what is the homework to be conducted prior to the following appointment

It is good if the physician asks the patient to recapitulate briefly to make sure that the patient understands the arrangements discussed during the visit

3. Discussion

The Psychodiabetic KIT was created in order to encourage doctors to make psychotherapeutic diagnoses and basic psychotherapeutic interventions that will improve their patients' coping with diabetes. Realistically, it may be helpful during a yearly follow up visit, that according to International Diabetes Federation guidelines [19] should include assessment of psychological functioning of patients with diabetes type 2 or when screening tools or clinical assessment indicate a risk of psychological problems related to diabetes, including comorbid depression or anxiety disorders. The diagnostic tools can be used together or separately. However, it is

recommended that the doctor or the nurse using the KIT become familiar with the details of The Brief Method of Evaluating Coping with Disease and are able to use examples of situations and reactions specific for the four main coping styles, in the process of educating the patient about his/her coping styles and, if needed, possibilities of its improvement. It may also be helpful for the patient to get a copy of the questionnaire with the key. It is crucial to explain to the patient that his/her perception of self-influence on the disease course, explain the need for the development by him/her the task oriented coping and the best solution oriented coping for dealing with diabetes related stressful problem. The patients with low level of the perception of self-influence on the disease course need interventions increasing this aspect of illness perception. It includes the "step-by-step" approach to the diabetes related problem together with self-monitoring effects of activity by making written records or self-rating scales. Otherwise, nonadherence to many of therapeutic recommendations among patients with a low perception of self-influence on diabetes course is very likely. Brief Self-Rating Scale of Depression and Anxiety needs specific norms for each language. However, the Polish sten norms can be helpful in a preliminary assessment of the intensity of symptoms of depression and anxiety (detailed ten norms are available from the first author).

They may also be used for the comparison of those symptoms in time. The version of the Psychodiabetic KIT tools included in the Appendix followed the rules of back-translation as it is a commonly accepted methodology in such cases. Still, their psychometric proprieties should be assessed in English speaking countries. Translations into other languages need back-translation procedures and assessment of their psychometric proprieties, before application in research. The main idea of the Psychodiabetic KIT is to facilitate clinical diagnosis, psycho-education of the patient considering coping, perception of self-influence as well as the need for monitoring depression and anxiety. Even non-validated translations of the KIT may be helpful in reaching these goals.

4. Application of the components of psychodiabetic KIT in research

Components of Psychodiabetic KIT were used in several research. This review presents only those which were published, including two cross-sectional, national studies. However, the results of other studies that resulted in on Ph. Thesis, and more than 10 M.A. thesis are currently in process of preparation for publications.

The national, cross-sectional study "Relationship between psychological coping style and insulin pen choice in patients with T2DM" [50] was aiming at assessment of relationship among coping styles and a choice of one of four available pens – insulin injectors that differed in technological complexity, size and accuracy:

- InnoLet – big and disposable, filled with insulin
- NovoLet – small and disposable; filled with insulin
- NovoPen 3 – durable, for multiple use, and filled each time by the patient

Inno – durable, for multiple use, compact size, that make discretely injection in social situations possible, as well as record of the dosage and time of injection. The study was

conducted by general practitioners with subsequent patients and only included a single visit during which treatment with insulin was initiated and when the patient chose an insulin injector. The style of coping was assessed at the same time with the working version of The Brief Method of Evaluating Coping with Disease (BMECD)[24], that had worst psychometric proprieties, assessed on smaller group than final one). The study involved 945 patients (553 females [59.1%]; 382 males [40.9%] – gender data were missing for 10 patients) aged 18–90 years (mean [SD]: 61.7 [11.7] years) who were beginning insulin therapy after a period of treatment for T2DM ranging from several months to 61 years (mean [SD]: 8.3 [5.9] years). The number (proportion) of patients in this study choosing each type of pen was: 460 (48.7%) NovoPen® 3; 269 (28.5%) NovoLet®; 25 (2.6%) Innovo®; 176 (18.6%) InnoLet®; data were missing for 15 (1.6%) patients. Statistically significant differences between mean BMECD scores were found among patients who chose one of four types of insulin pens. The results indicated that an avoidance-oriented coping style was associated with choosing the simplest insulin pen, an emotion-oriented coping style with a more complicated insulin pen, a task-oriented coping style with a modern pen, and the ‘the best solution oriented’ coping style with the technologically most advanced pen. In spite of many methodological limitations of this study its results encouraged the elaboration of the final version of the BMECD and supported its usefulness in clinical practice.

Another cross-sectional national study [46] involved 480 physicians and 1199 patients (655 females [54.6%]; 544 males [45.4%]) aged 4–93 years (mean [SD]: 62.0 [11.6] years) who were beginning insulin therapy after a period of treatment for diabetes ranging from several months to 36 years (mean [SD]: 8.0 [5.5] years). The study was conducted with consecutive patients and only included a single visit during which treatment with insulin was initiated and when the patient made their choice of insulin injector. Analysis of the relationship between the perception of self-influence on the disease course and choice of insulin pen was possible for 1184 (98.7%) persons enrolled in the study. The Brief Measure to Assess Perception of Self-Influence on the Disease Course: Version for Diabetes (BMAPS-IDC) was applied. The number (proportion) of patients in this study choosing each type of pen was: 538 (44.9%) NovoPen® 3; 383 (31.9%) NovoLet®; 220 (18.4%) InnoLet®; data were missing for 58 (4.8%) patients. In the group that chose the simplest disposable injector – InnoLet® – the mean BMAPS-IDC score (12.23) was significantly lower than in group that chose the smaller and more complicated type of injector (NovoPen® 3, 15.72). The mean BMAPS-IDC score in the group that chose the intermediate injector (NovoLet®, 13.88) lay between, and was statistically different from, the means of the other two groups.

Of the 395 patients in this study with data from relevant assessments, mean HbA_{1c} levels were ≤6.5% (low risk of cardiovascular [CV] complications) in 10 (2.5%) patients; between 6.6 and 7.5% (risk of arterial complications) in 38 (9.6%) patients; and >7.5% in 347 (87.8%) patients. Mean (SD) BMAPS-IDC scores in the groups with low risk of CV complications, risk of arterial complications, and risk of microvascular complications were: 18.20 (2.97), 16.55 (4.38), 14.43 (4.35), respectively. The difference in BMAPS-IDC scores between the group at low risk of CV complications (HbA_{1c} ≤6.5%) and the group at risk of microvascular complications (HbA_{1c} >7.5%) was statistically significant ($p < 0.01$).

A correlation analysis suggested that the perception of self-influence on the course of diabetes has an increasing impact on the effectiveness of the treatment, as assessed by HbA_{1c} levels following long-term treatment. In total, 72 patients had been treated for less than 3 years, 72 for 3 years or more, and 249 for more than 5 years. The correlations were not significant in the group treated for diabetes for less than 3 years. Weak, but statistically significant correlations were found in the group treated for more than 3 years for diabetes ($r=-0.18$; $p<0.05$) and for those with a disease length over 5 years ($r=-0.2$; $p<0.05$).

Limitations of both of these studies include the observational design, which meant that participating doctors were not blinded to the results and could potentially influence patients' results. Due to the cross-sectional design the data presented in this paper only describe a relationship between coping styles or the perception of self-influence on the disease course and the type of device used at the beginning of insulin therapy, but cannot prove a cause and effect relationship, which may be worthy of further investigation.

Studies, which were presented above, revealed that the coping style and perception of self-influence on the course of diabetes have an important role in the process of the treatment choice. The relationship between the perception of self-influence on the disease course and the effectiveness of the treatment manifested by HbA_{1c} level is also noteworthy.

Overall, the results of these studies indicate that psychological intervention aimed at developing task-oriented and 'the best solution-oriented' coping styles may result in the choice of more precise treatment, allowing more accurate glycemic control. Therefore, helping patients understand and believe that they can control the outcome of their diabetes is of value.

Conversely, clinicians may wish to use these findings to help them identify the coping style and the level of belief in self influence for a particular patient, which could enable further individualization of the treatment plan.

Comparing coping styles, occurrence of depressive and anxiety symptoms, and locus of control among patients with diabetes type 1 and type 2 in groups of 30 with type 1 and 27 with type 2 [51]. In the group of patients with diabetes type 2 there were found significantly higher, than in diabetes type 1: emotion oriented coping style ($M = 0.4$; $SD = 0.814$ vs. $M = 0.93$; $SD = 0.958$; $p = 0.029$), avoidance oriented coping style ($M = 0.63$; $SD = 0.809$ vs. $M = 1.22$; $SD = 0.892$; $p = 0.011$); level of depression ($M = 4.13$; $SD = 2.662$ vs. $M = 5.63$; $SD = 2.911$; $p = 0.047$), attribution of the health control to a chance ($M = 19.03$; $SD = 6.672$ vs. $M = 24.26$; $p = 0.004$) and also lower task-oriented coping style. ($M = 1.8$; $SD = 1.095$ vs. $M = 1.07$; $SD = 0.829$; $p = 0.007$).

What was also found, were the significant relations among the best solution-oriented coping style, emotion oriented style and the level of anxiety (respectively $r = -0.373$; $r = 0.37$) and level of depression (respectively $r = -0.352$ i $r = 0.476$); solution-oriented coping style, emotion-oriented coping style, level of anxiety and with the attribution of the health control to a chance (respectively $r = 0.341$; $r = 0.271$; $r = 0.301$); level of depression and locus of control ($r = 0.322$), i.e.: higher level of depression is correlated with more external locus of control; attribution of the health control to a chance and the older age ($r = 0.407$). The results of this preliminary study suggests that patients with diabetes type 2 use more maladaptive coping styles (emotion and avoidance oriented) than patients with diabetes type 1, and that use of specific coping styles is related with depression and anxiety

5. Assessment of psychodiabetic kit by doctors

In a survey conducted during a series of educational conferences in 2006, out of 217 doctors treating patients with diabetes, approximately half of them were acquainted with the BMECD and one-third with the BMAPS-IDC. In addition, 52.6% of doctors familiar with the BMECD, reported using it in everyday practice, and the majority were keen to further develop their experience with psychological tools used for the support of diabetic patients. [52]

6. Conclusions

1. Current guidelines of the International Diabetes Federation [19] and American Diabetes Association [20] as well as consensus statement of the American Diabetes Association and Europeans Association for Study of Diabetes, in respect to current knowledge, recommend individualized patient-centered approach in treatment and management of diabetes type.
2. A team approach, including variety of medical professionals, is recommended by IDF [19] on the "comprehensive" and "recommended" levels of care. However, these guidelines also describe a kind of "limited" care in respect to existence of "settings with very limited resources – drugs, personnel, technologies and procedures" [19].
3. The Psychodiabetic KIT facilitates, brief psychotherapeutic diagnosis and education of patients dealing with coping with diabetes related stressors as well as simply therapeutic interventions based on currently recommended rules of self-management and empowerment aiming at increasing the patients' perception of self-influence on the diabetes course and at the development of task related and "the best solution oriented" coping with stressful problems. It also may be used for depressive disorders and anxiety disorders screening.
4. The results of research indicate that the Brief Method of Evaluating Coping with Disease and the Brief Measure To Assess Perception Of Self- Influence On The Disease Course are useful in research. Their results confirm that coping styles and perception of self-influence on the disease course are related with the choice of treatment modality, i.e. insulin injector. The difference of the level of perception of self- influence on diabetes course was statistically significantly higher in between the group at low risk of CV complications ($HbA_{1c} \leq 6.5\%$) than in the group at risk of microvascular complications ($HbA_{1c} > 7.5\%$). There were also weak, but statistically significant correlations between the perception of self-influence on the course of diabetes, the effectiveness of the treatment, as assessed by HbA_{1c} levels in groups of treated patients. The results of the preliminary study suggest that patients with diabetes type 2 use more maladaptive coping styles (emotion and avoidance oriented) than patients with diabetes type 1, and that a use of specific coping styles is related with depression and anxiety.
5. The results of anonymous survey among Polish doctors treating diabetes indicate that Psychodiabetic KIT may be useful in everyday practice.

Appendix

Brief method of evaluating coping with disease¹: Version for men (Kokoszka, Radzio, Kot, 2008)

Name.....Date.....

Please circle one answer to each of the four questions:

1. If you found yourself in a group of people having to deal with a serious problem (among people shamed by a building society authorities or a service company not meeting its obligations), you would most probably:
 - a. Do nothing and count on someone else to take care of it or would figure out that its pointless and dealing with it is a waste of time
 - b. Look for others who were harmed and, together with them, try to protect my rights
 - c. Try to influence the people who got engaged in solving the problem, so that I could get the best outcome
 - d. Be mainly angry and upset and would not feel like doing anything
2. When you notice longer-lasting swerves in your health (minor pain, weakness), you usually:
 - a. Not worry for a while and wait for them to pass
 - b. Worry that it might be a beginning of a serious illness, which may potentially cause problems
 - c. Look for information in a health-guide, ask acquaintances who have had similar problems or contact a doctor
 - d. Contact a doctor as soon as possible and want to do everything possible to prevent the development of the disorder or at least assuage its course
3. If you had a chance to inherit, but it required a long-drawn participation in a trial, you would probably:
 - a. Decline participation as not being sure about the success you wouldn't want to waste time on unpleasant activities
 - b. Lodge a lawsuit yourself
 - c. Hire a lawyer to best represent your interest
 - d. Be irritated by the situation and ask relatives or friends to take care of it
4. When there is a serious conflict between your close-ones, you usually:
 - a. Try talking to them in order to resolve the conflict
 - b. Do nothing and try to avoid thinking about it
 - c. Feel upset and worries because I don't like situations like that
 - d. Try to link them to others who had similar problems or talk to them about how others handled similar situations

¹ The authors gratefully acknowledge permission to translate this method to Via Medica, that published paper: Kokoszka A, Radzio R, Kot W. Krótka Metoda Ocena Radzenia Sobie z Chorobą; wersja dla mężczyzn i kobiet (Brief Method of Evaluating Coping with Disease: versions for men and women). Diabetologia Praktyczna 2008;9(1) 1-11.

Brief method of evaluating coping with disease: Version for women (Kokoszka, Radzio, Kot, 2008)

Name.....Date.....

Please circle one answer to each of the four questions:

1. If you found yourself in a group of people having to deal with a serious problem (with young people disturbing peace in your community, with your superior at work or with the authorities of a building company), you would most probably:
 - a. I would try to engage in some other activity and wait patiently, believing that that the problem will be solved
 - b. Engage in the activities of the group trying to solve the problem
 - c. Try to influence the people who got engaged or lead them myself, but mainly I would try to solve the problem in the best option for me
 - d. Be mainly angry and upset and would not feel like doing anything
2. When you notice longer-lasting swerves in your health (minor pain, weakness), you usually:
 - a. Hope, they are not serious and wait for them to pass
 - b. Worry and are afraid of different possible illnesses
 - c. Look for information in a health-guide, ask acquaintances who have had similar problems or contact a doctor
 - d. Contact a doctor as soon as possible and want to do everything possible to prevent the development of the disorder or at least assuage its course
3. If you had a chance to inherit, but it required a long-drawn participation in a trial, you would probably:
 - a. Resign your participation
 - b. Lodge a lawsuit yourself
 - c. Hire a lawyer to best represent your interest
 - d. Be worried by the need of participating in the procedure and rely on my relatives' opinions
4. When there is a serious, prolonged conflict between your close-ones, you usually:
 - a. Try talking to them in order to resolve the conflict
 - b. Do nothing and try to avoid thinking about it
 - c. Feel upset and worried and want them to solve it as quickly as possible
 - d. Try to assess whether they need help and what I could do to offer best possible support

Key for interpreting answers

Versions for both gender

Find each of the patient's answer on the list below then calculate the number of the responses characteristic for each of four coping styles. This result can be discussed with the patient and the answers characteristic for each of the coping style can be used for the patient education on coping styles. In research, row results are used.

Task-oriented coping style

1. b) look for others who were harmed and, together with them, try to protect my rights/ engage in the activities of the group trying to solve the problem
2. c) look for information in a health-guide, ask acquaintances who have had similar problems or contact a doctor
3. b) lodge a lawsuit yourself;
4. a) try talking to them in order to resolve the conflict

Best solution-oriented coping style

1. c) try to influence the people who got engaged in solving the problem, so that I could get the best outcome/ try to influence the people who got engaged or lead them myself, but mainly I would try to solve the problem in the best option for me
2. d) contact a doctor as soon as possible and want to do everything possible to prevent the development of the disorder or at least assuage its course
3. c) hire a lawyer to best represent your interest
4. d) try to link them to others who had similar problems or talk to them about how others handled similar situations/ try to assess whether they need help and what I could do to offer best possible support

Emotion-oriented coping style

1. d) be mainly angry and upset and would not feel like doing anything
2. b) worry that it might be a beginning of a serious illness, which may potentially cause problems/ worry and are afraid of different possible illnesses
3. d) be irritated by the situation and ask relatives or friends to take care of it/ be worried by the need of participating in the procedure and rely on my relatives' opinions
4. c) feel upset and worries because I don't like situations like that/ feel upset and worried and want them to solve it as quickly as possible

Avoidance-oriented coping style

1. a) do nothing and count on someone else to take care of it or would figure out that its pointless and dealing with it is a waste of time/ I would try to engage in some other activity and wait patiently, believing that that the problem will be solved
2. a) not worry for a while and wait for them to pass/ hope, they are not serious and wait for them to pass
3. a) decline participation as not being sure about the success you wouldn't want to waste time on unpleasant activities/ resign your participation
4. b) do nothing and try to avoid thinking about it

The sum of given answers

Task-oriented coping style –

Best-solution oriented coping style –....

Emotion-oriented coping style –....

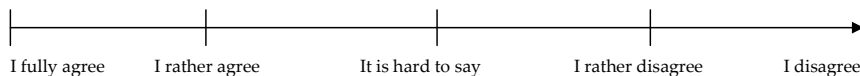
Avoidance-oriented coping style –....

Brief measure to assess perception of self- influence on the disease course (Kokoszka, 2005)²

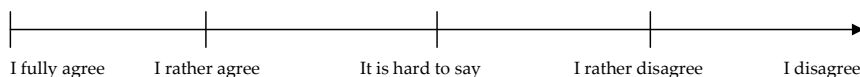
Name.....Date.....

Please circle your personal opinion on each of the following questions:

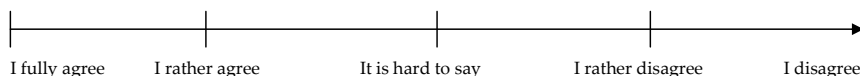
1. If I take care of myself, I will have a better health



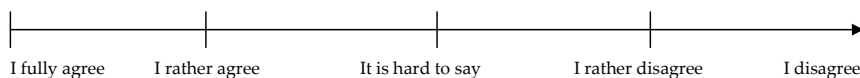
2. If I accomplish all my plans related to the management of diabetes (treatment, diet, physical activity) I generally feel relief



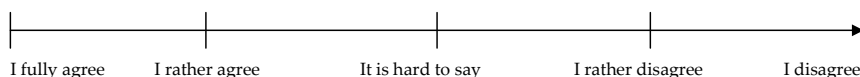
3. I spend a lot of time preventing possible future complications of my illness



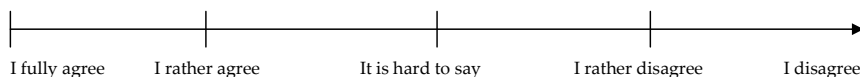
4. Diet and lifestyle do not influence my health, because the most important is medication (and insulin)



5. The course of my illness depends mostly on fate



6. The experience gained during therapy helps me to better cope with other problems in my life



² The authors gratefully acknowledge permission to translate this method to Wydawnictwo Przegląd Lekarski that published the paper: Kokoszka A. Krótka metoda oceny poczucia wpływu na przebieg choroby: opis wersji dla osób z cukrzycą (Brief measure to assess perception of self-influence on the disease course. Version for diabetes).Przegląd Lekarski 2005;62(8) 742-745

Key

Questions 1, 2, 3, 6

- I fully agree – 4
- I rather agree – 3
- It is hard to say – 2
- I rather disagree – 1
- I disagree – 0

Questions 4, 5 – inverted score

- I fully agree – 0
- I rather agree – 1
- It is hard to say – 2
- I rather disagree – 3
- I disagree – 4

Interpretation according to standardized ten scale:

- Low scores 0-11 (< 5 sten)
- Average scores 12-15 (5-6 sten)
- High scores 16-24 (> 6 sten)

Brief Self- rating scale of depression and anxiety (Kokoszka, 2008) ³

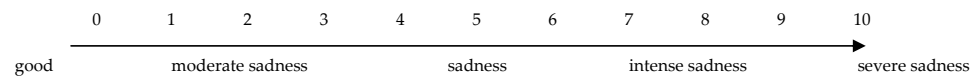
Name.....Date.....

Please assess your well-being on the following scales by putting an X in a chosen place of the scale.

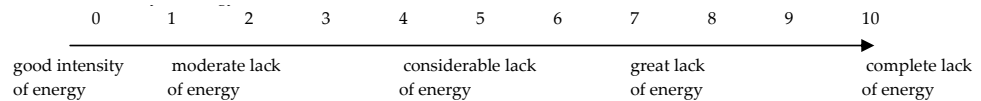
You should compare your current well-being with previous feeling of comfort.

Number 10 stands for an intensity of the assessed feature that is the highest that you can imagine.

1. Mood

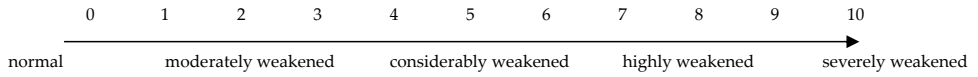


2. Intensity of energy

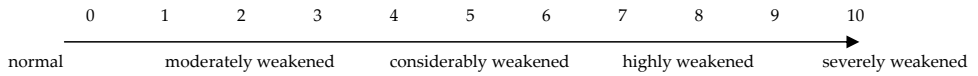


³ The authors gratefully acknowledge permission to translate this method to Termedia, that published, the paper: Kokoszka A. Krótka Skala Samooceny Depresji i Lęku: opis konstrukcji oraz właściwości psychometrycznych dla osób z cukrzycą (Brief Self-Rating Scale of Depression and Anxiety: description of the scale construction and psychometric proprieties for persons with diabetes). Przewodnik Lekarza 2008;11(6) 74-81

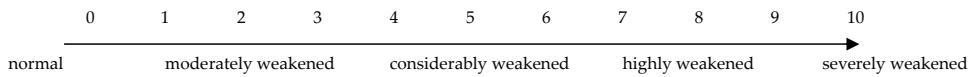
3. Power of interests



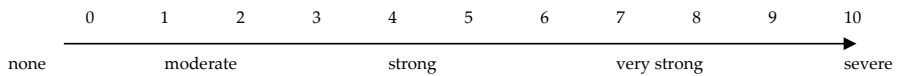
4. The capacity to feel pleasure



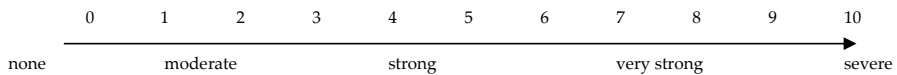
5. Speed of thought and action



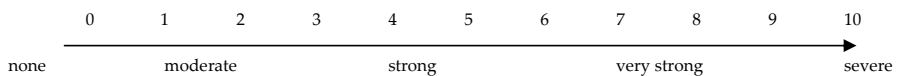
6. Worry, tenseness, nervousness



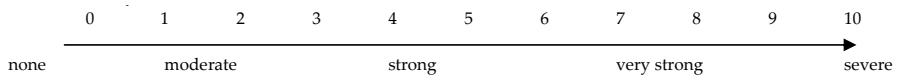
7. Anxiety (feeling of fear without a certain reason), fear of a specified threat



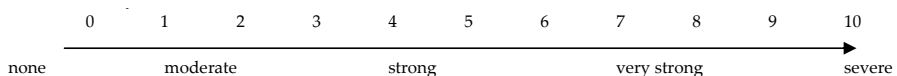
8. Apprehension and distress about something that might happen



9. Feeling of physical tension in a body (intense muscle tension, trembling hands, aches)



10. Desire to avoid situations that cause anxiety (hiding, withdrawing)



Key — Adding the scores 1-5 depression subscale; 6-10 anxiety subscale

Reliability: depression scale α Cronbacha= 0,95; anxiety scale α Cronbacha= 0,94, entire scale α Cronbacha=0,956.

Interpretation according to standardized ten scale:

Depression scale:

Low scores 0-2 (1-4 sten)

Average scores 3-12 (5-6 sten)

High scores 13-50 (7-10 sten)

Anxiety scale:

Low scores 0-4 (1-4 sten)

Average scores 5-14 (5-6sten)

High scores 15-50 (7-10 sten)

Entire scale:

Low scores 0-8 (1-4 sten)

Average scores 9-27 (5-6 sten)

High scores 28-100 (7-10 sten)

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