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A review on effectiveness of motivational interviewing in the management of diabetes mellitus

Abstract

Diabetes mellitus is among the chronic health conditions that patient's cooperation and satisfaction is an important contributing factor for a good treatment outcome. Motivation is an important factor in the management of many medical and psychiatric disorders. Any change is like a puzzle made from a number of pieces. For a complete picture we need to assume motivation as the basis of any change process. Motivational interviewing is a client-centered and guiding method for the strengthening and increasing internal motivations of the clients' through identifying and discovering their ambivalences. Using motivational interviewing is increasing throughout the world. The effectiveness of this method can be seen in addressing chronic health problems which are among the important health issues which are affected negatively by mental and behavioral problems.

The effectiveness of motivational interview as a method for positively influencing drug treatment, nutrition, weight control, hypertension, and dyslipidemia is emphasized. In this paper we review published studies on motivational interviewing among diabetic patients.

Keywords: diabetes mellitus, motivational interview

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Diabetes

Diabetes Mellitus (or diabetes) is the most common metabolic disorder, caused by incapability of body in the metabolism of carbohydrates, fats, and proteins. This failure results in increased level of blood glucose. There are some specific and distinctive types of diabetes. This disorder is caused by complex reactions between genetic and environmental factors. Metabolic regulation disorder, induced by diabetes, results in secondary pathophysiologic changes in several organs, which per se can lead to a significant burden both for the patients as well as the health care system.[1,2]

The global prevalence of diabetes significantly increased in the last two decades from about 300million in 1985 to more than 230million in 2004 and 382million in 2013. According to the estimations of the International Diabetes Federation, the number of diabetic patients will reach 592million by 2035. Although the incidence of types 1 and 2 diabetes is globally increasing, this rate is higher for the latter type. This can be due to increased prevalence of obesity, decreased rate of physical activities, and aging, which are all considered as the consequences of industrialization.[1,3]

Although, diabetes is a main cause of mortality, some studies suggest that the reported number of deaths among diabetic patients is underestimated. In the United States, diabetes was the seventh cause of mortality in 2010. According to a recent estimate, diabetes is the cause of 5.1million deaths per year (8% of global deaths in 2013). According to the estimates, the diabetics accounted for 11% of global medical expenditures in 2013.[1]

Treatment of this problem is mostly medical; but the effects of psychological factors on chronic diseases including diabetes have been frequently shown.[4,5] Comparing other chronic less symptomatic diseases, diabetes needs more changes in life style;[6] therefore, psychological interventions may improve different aspects of knowing the illness and compliance with the treatment.[7–8] Diabetes, as a chronic disease, is among the most complicated illnesses in terms of medical management as well as self-management. It is shown that 95% of the diabetes care and treatment among adults are done by the patients themselves (self-care), none of modern diabetes management tools will be effective unless the psychological problems and issues of these patients are solved.[9]

This chronic disease can affect a variety of physical functions, as well as mental/psychological condition, interpersonal, familial, and social relationships, and the person's general perception of health.[10] Due to having high burden of disease, frequent complications, direct and indirect financial burdens on the health system, and huge impact of patient's quality of life, diabetes is an important health issue. The direct costs incurred by diabetes account 5.2-15% of overall health budgets of all countries.[11] In 2014, the global prevalence of diabetes was estimated to be 9% among adults aged 18+ years [12]. More than 80% of diabetic mortalities have occurred in low- or middle-income countries.[13] The World Health Organization (WHO) estimates that diabetes will be the 7th leading cause of death in 2030.[14]

Diabetes causes several limitations including the need for frequent insulin injection, medication costs, mandatory diet, frequent infections, and probability of hospitalization for disease complications. It may cause also limitations for marriage, pregnancy, and employment. These limitations affect mental health of such patients. In addition, thinking about problems over lifespan and reduced life expectancy, caused by disease and its unexpected complications, evoke negative emotions. The resulting hormones from these negative emotions can increase blood sugar and have anti-insulin impacts, which result in diabetic complications in long-term. Indeed, negative emotions (e.g. sadness, anxiety, anger, etc.) can result in secondary hormone secretion problems, and by this way affect diabetes.[15–17]

Some psychological problems that are prevalent among people with diabetes cause poor disease-control management.[18] Adaptive coping with stresses, caused by such chronic disease as diabetes, is not an easy task and challenges many patients. A positive significant correlation has been found between poor diabetes control and events that cause negative emotions in patients.[16]

The relationship between psychological-behavioral factors and chronic medical conditions is presented in the health-care models.[19] Psychotherapy in medical conditions has decreased the high-costs of exploiting medical services and increased mental health of patients; thus planning and using interventions that are based on effective and evidence-based psychological approaches are very important with respect to medical and chronic diseases in general, and diabetes in specific.[18]

Motivational interviewing

The best technique for helping clients that struggle with behavioral changes is motivational interviewing.[20] Since behavioral problems are an inseparable part of substance abuse disorders,[21,22] this clinical method was developed in 1983 as an intervention and a type of short-term treatment for problem drinking, where the patient's lack of motivation is a common barrier to change.[20] During 1990's, other physical and chronic disorders, in which behavioral change is an important and common challenge, were examined using motivational interviewing (MI).[20,23]

Motivational interviewing is a client-oriented and guiding style, is based on cooperation aiming at empowering motivation and commitment of the person to change through exploration, and elimination of uncertainties and hesitations.[23–25] Many components of MI have been presented by philosophical thinking in other medical systems over time.[26] Motivational interviewing, as a humanistic orientation, is influenced by the client-centered therapeutic approach of Carl Rogers. It also has an origin in behavioral therapy and behaviorism.[27] However, the guiding nature of MI is its main characteristic which moves beyond a traditional client-oriented approach. Specific features of MI include the way the relational and technical components of these this approach are combined, and the time and mechanism of using them in favor of a change-oriented conversation.[26] MI also draws on social and cognitive psychology. This method combines the components of the mentioned therapeutic styles to help people to consider why change might be important to them and develop a plan. MI experts create the space for ambivalence to emerge and respect the uncertainty and hesitation of the clients about change. Emphasis is on understanding client values and their long-term interests in order to empower positive, lasting change. MI experts listen carefully for the language of change within an atmosphere of acceptance and compassion, reinforcing client autonomy and choice. As the change talk strengthens, these actions help the clients to prepare a practical plan.[27]

The motivational interviewer relies more on the clients' views than those of specialists. Therapists avoid persuading the clients towards specific solutions that may create discord in the relationship. Instead, they evoke their clients' personal interests to guide the conversation towards commitment to a specific action that helps them in eventually achieving positive health and related changes objectives. To achieve these goals, therapists employ four processes, namely engaging, focusing, evoking, and planning.

Engaging requires understanding the client's standpoint as a solution for extending therapeutic alliance. It can provide a strong foundation for three other components of MI. Focusing refers to the determination of one or more valuable objectives for change, towards which the clients are moving.[28] Evoking requires stimulating and strengthening thoughts, feelings, and motivations of the clients in favor of change. It is relatively confined to MI.[27,28]

Planning is a participatory process, in which the expertise of a therapist and a client is combined. The aim is to develop a self-care plan for implementation by the client. The planning process specifically needs patients' self-awareness about what is realistic and what is feasible and practical in their life.[28]

Motivational interviewing and diabetes healthcare

Comprehensive and empirical care models, including chronic care model, support common medical instructions that meet the needs of patients with chronic diseases within the framework of an evidence-based healthcare system. According to the chronic care model, healthcare systems should perform better in creating "informed and active" patients. Such patients feel responsible for the management of their own illness. This requires educating self-management to patients through equipping them with information, motivation, and self-confidence, which can be achieved using MI. Motivational interviewing has been found a strong tool for providing patients' emotional needs as well as creating a strong therapeutic alliance with healthcare specialists in long-term treatments.[6] Generating motivation in patients to make behavioral changes is of the most important task of healthcare providers. Motivational interviewing is a new and inspiring method for the development and improvement of the patients' therapeutic commitment. It is also a good counseling technique for making positive change.[29]

Evoking behavioral change in patients is a major problem in the field of medical management. The effective treatment of chronic diseases such as diabetes, hypertension, and obesity depends on several factors like pharmacotherapy compliance, health knowledge, the amount of physical activity, and healthy/unhealthy diets. In this context, MI attracted a growing acceptance as a fully effective approach with an extensive capability in diseases-management.[6] Several studies, including a large-scaletrial in 35 primary healthcare centers in Spain, have shown the effectiveness of MI in the lowering of blood lipids in patients with dyslipidemia.[30] Systematic reviews of MI application for weight loss have reported a significant and moderate weight loss in 37.5% and 54.2% of cases, respectively.[31] A recent study in Iran implies the effectiveness of MI in reducing weight of obese or overweighed patients.[32] Therefore, MI has become popular among different medical populations and disciplines as a pioneer and effective method in the field of healthcare for making behavioral change in patients. Motivational interviewing has succeeded in empowering therapeutic involvement, improving emotional health, and increasing motivation and self-confidence for change. In addition, MI has been considered effective as much as and sometimes more than the other common therapeutic methods in a wide range of behavioral goals. An important element of MI lies in this concept that patients are naturally aware of their needs and think about how to fulfill them. This contradicts the classic standpoint that considers physicians as "providers", capable of providing whatever the patients do not own. These include skills such as insight and problem solving ability. The value of this style can nowadays be seen in primary healthcare, in which the service providers are faced with several problems of chronic physical diseases that are intensified by mental and behavioral disorders.[6]

Despite high prevalence of diabetes, strong evidence show that a large number of diabetic patients do not observe glucose, blood pressure, and lipid control instructions. These healthcare gaps indicate the necessity of taking measures by the specialists for behavioral change in all aspects of diabetic care (including diet, physical activity, adherence to medication, and blood glucose

control) of patients. Compensation for negative consequences of poor diabetes-management requires an inclusive training and motivational facilitation. Appropriate diabetic care includes different measures such as frequent checkups by primary care physicians, endocrinologist, psychiatrist, psychologist, ophthalmologist, foot care specialist, diabetes educator, nutritionist, , and some other specialists. The important behaviors are control of carbohydrates intake, hydration, blood sugar testing, physical activity, weight loss, regular foot checkups for probable skin damage, taking medications, and checkup by a physician. Diabetes care is a life-long process. The advantage of frequent checkups is not as great as pharmaceutical compliance, and engaging patients with diabetes-control is very important. There is valid research evidence on the effectiveness of MI in diabetes-care and facilitation of behavioral change, which emphasizes on the appropriateness of this diabetes treatment method.[6] Although the majority of studies have reported positive outcomes, some studies found the use of MI by general physicians[33] and diabetes educators[34] ineffectiveness for diabetic patients.

There are three main communicational skills (including asking, listening, and informing) in caring for chronic diseases, which, when used within a guiding style, support movement in the direction of change.[23] The guiding style is a method, in which the clients and the specialist work in partnership. . They "walk" together; meanwhile, the therapist points to the paths and options, and inform the client about probabilities, what others have done, and the possible risks and advantages of each method. When the therapist points to the paths, the client acknowledges that he/she is helping him in selecting a direction that matches him well. This implicitly conveys this message that "we help you to solve this problem by yourself".[26]

A key process in healthcare, specifically in the management of chronic diseases, is the activation of disease and/or having "an informed and active patient as a partner in his/her health-management," who is active in a mutual consultation relationship with therapist rather than a passive receiver of information and healthcare. Engaging is not necessarily a time-consuming process, and can be initiated within minutes. In primary cares, initial assignment of time to informed interaction and engagement precedes hasting in collection of facts or sharing information.[28] The extensive executive capability of MI has turned it into a perfect communicational style for addressing different conditions. It has also made it applicable for different patient groups who are treated with primary care specialists. In fact, the client-oriented essence of MI has made it intrinsically flexible, leading to its general acceptance. Research findings also confirm the greater effectiveness of this therapeutic method than other approaches for various populations.[6]

Diabetes can be treated when the patient knows himself as a main member of the treatment team rather than one who should receive healthcare from diabetes treatment team.[1] In mental health disorders, motivation and commitment to therapeutic instructions are of important tasks of today's psychiatrists. These are cornerstones of therapeutic outcomes, since if the patient is not ready to accept, the most powerful treatment will also be useless. The application of a structured, flexible, and step-by-step approach that matches client's preferences can be effective. It seems that MI is suitable for the fulfillment of these needs.[35]

Individual use of MI for different problems results in behavioral change and improvement of disease symptoms, which has been proven by several valid clinical trials.[36–38] The effectiveness of this method, which was majority done individually, has been also shown in group.[39] In general, few studies have been conducted on group MI or in-group use of MI elements in other treatments such as cognitive-behavioral therapies.[27] The focus of the limited number of studies that describe MI groups in form of separate interventions has been mostly on substance use behaviors.[40–42] In a review study, performed in the Harvard University, the combination of positive psychology interventions and MI has been reported effective for patients with type 2 diabetes.[43] Studies into group MI provide primary evidence that shows this method has affected some change processes, and like other substance-use reduction interventions can increase the quality of continuous participation in treatment and subsequent cares. These effects are similar with the effects of individual MI.[36]

Other studies regarding application of MI in diabetes

After the approval of effectiveness of MI in alcohol and substance abuse disorders in recent decades,[44] this method has been used for medical conditions,[6,45] specifically behavioral disorder like diabetes and obesity.[12,46–47]

In a review study (2014), the effect of MI on diabetes control has been emphasized. This article included studies, performed during 2006-2011, on potential capability of MI in the improvement of types 1 and 2 diabetes, as well as obesity in children and adults. The majority of reports in this article have shown the improvement of metabolic control in adults with type 2 diabetes. MI only led to short-term improvement of type 1 diabetes in adults.[46] Another review study in China has reported MI as of the most effective psychological intervention for type 2 diabetes.[48] In another study (2012) into 250 subjects, researchers investigated the effect of MI on self-management, improvement of blood sugar, and psychological status in patients with type 2 diabetes. The participants were randomly divided into individual MI and usual care groups. The intervention included different types of MI techniques and preparation of the patients for change. Usual care in the control group was provided by nurses. Results indicated a significant improvement in self-management, self-efficiency, life quality, and glycosylated hemoglobin of the case groups in a three-month follow-up.[49] A study from Iran (2010) compared the effectiveness of group MI with that of group cognitive-behavioral training in the improvement of physical conditions in 93 adults with type 2 diabetes. The participants were randomly placed into group MI, cognitive-behavioral group training, and control groups. Each intervention included four 90-minute long sessions. Findings indicated that the mean body mass index significantly decreased in MI and cognitive-behavioral training groups, as compared to the control group. Moreover, the mean amount of hemoglobin A1C reduced more in the MI group than cognitive-behavioral training group. These results showed that group MI and cognitive-behavioral training were effective interventions for weight control in such patients. In addition, MI may be a more suitable intervention than cognitive-behavioral training for the improvement of blood sugar.[50] A study (2010) evaluated the effectiveness of diabetes self-management education through MI in the improvement of blood sugar control in the rural elderly. In this study, 66 participants with mean age of 64.9 years (ranging from 60 to 81) and uncontrolled diabetes were investigated through video calls for 6 months. The participants (n=34) received diabetes self-management education, first in weekly and then monthly routines; whereas, the control group (with 32 subjects) received healthy lifestyle education through monthly video calls. Although, hemoglobin A1C reduction was observed in both groups, the difference was significant in the case group (p=0.015) and

insignificant in the control group (p=0.086). A significant increase was also observed in the amount of knowledge about diabetes (p=0.023) and diabetes self-efficiency (p=0.002). In addition, there was a significant difference in HbA1c level between subjects with high degrees of self-efficiency and subjects with low degrees of self-efficiency.[51] A primary study (2010) investigated the effectiveness of MI techniques in the improvement of type 2 diabetes among the native americans in the United States. Data of random blood sugar, A1C, demographic variables, health behaviors, and psychological self-reporting instruments was gathered in the beginning and three-month after the intervention. The intervention included two 30-minute long individual MI sessions. Results indicated that the intervention significantly improved the symptoms of depression, genetically-racial fatalism, satisfaction of treatment, and social-occupational concerns. Also, the post-intervention A1C level of patients significantly differed from pre-intervention level of A1C. According to the final analysis, the MI explained 89.6% of overall difference of A1C.[52]

The long-term effects of using MI by general physicians were shown in a study (with one-year follow-up) into type 2 diabetic patients in Denmark. Results indicated the improvement of patients' perception of disease and their role in diabetes control and prevention.[53] These physicians were educated in two stages in two days.[54] Another study reported the association of some problems with the use of MI by diabetes care nurses; however, it confirmed the effectiveness of this intervention in the improvement of patients' readiness for change.[55] In addition, another study on the using MI by nurses showed the effectiveness of it in the improvement of systolic blood pressure, depression, and screening for complications in type 2 diabetic patients.[56] The application of MI by nurses has been shown effective in self-care conducted by type 2 diabetic patients,[57] and diabetic condition of patients hospitalized for cancer.[58]

One of the first studies on assessment of MI in adolescents with type 1 diabetes reported a decrease in the amount of hemoglobin A1C by more than 1, as well as a better feeling of capability in living with diabetes.[59] Another study in a pediatric hospital in the US has suggested the cooperation of an educated psychologist and an endocrinologist in performing MI, as an approach for improving therapeutic adherence in adolescents with type 1diabetes.[60] In a review study into the role of MI in children with type 1 diabetes, this method was shown effective in the improvement of blood sugar control, and more importantly in therapeutic cooperation with patients.[61]

Conclusion

The majority of studies have emphasized the effectiveness of MI in types 1 and 2 diabetes in adults, children, and adolescents. Therefore, this therapeutic method can be used for managing and controlling blood sugar in this group of patients. In addition, the internists and endocrinologists can utilize this method in all aspects of diabetes control (including diet, physical activity, pharmacological compliance, and blood glucose control) that requires consensual cooperation with patients, engaging him in a working relationship, and generating adequate motivation in him.

The MI sessions can be considered along with other medical treatments to not only improve therapeutic effectiveness but also decrease frequent checkups of those who lack therapeutic and pharmacological compliance. This prevents additional costs to the patient and society. In addition, it helps patients in better blood sugar control and preventing the development of other diabetes comorbid diseases such as cardiovascular disorders, hypertension, blindness, and renal disorders.

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Conflicts of interest

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