Original Article

The Effects of Motivational Interview on Healthy Behaviour and Quality of Life in the Uncontrolled Type 2 Diabetes Patients

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Abstract

Objectives: The study aims to determine the impact of motivational interviews, which were conducted with type 2 diabetes patients at high risk of diabetes, on healthy lifestyle behaviors and life qualities of the individuals.
Materials and methods: The semi-experimental study was designed with a pre-test and post-test in a single group. In the first phase, the study was conducted with 30 individuals who could be connected among 44 type 2 diabetes patients at high risk of diabetes. Six motivational interviews, each of which lasted 120 minutes, on the management of type 2 diabetes were conducted with individuals. The data of the study were collected through the Healthy Lifestyle Behaviors Scale II and WHO Healthy Lifestyle Behaviors Scale BREF.
Results: The study showed that there was a statistically significant difference between the individuals' scores in both scales and the pre-test post-test scores in all their sub-dimensions ($p<0.05$). Accordingly, it was found that motivational interviews improved individuals' healthy lifestyle behaviors and increased life quality.
Conclusion: In line with these results, it is recommended to conduct studies in which motivational interviews are more commonly and comprehensively applied for diabetes management.

Key words: Diabetes mellitus, Healthy lifestyle, Motivational interviewing, Nursing, Quality of life

Introduction

Diabetes, one of the rapidly growing health problems of the twenty-first century, has been increasing worldwide, and it is estimated that there were 463 million diabetics in the world in 2019. Diabetes can cause vision loss, tooth loss, pregnancy complications, cardiovascular diseases, kidney diseases, neuron, vascular damage, and foot problems if it is not controlled (IDF, 2019).

According to the American Diabetes Association, effective interventions can prevent type 2 diabetes and diabetes-related complications (ADA, 2020a). The recommended chronic care model encourages patient-centered care which supports self-management, which is planned with a team approach, and prepared by showing respect to individuals' personal preferences, values, and needs for the control of diabetes (ADA, 2020b).

International organizations consider the development of healthy lifestyle behaviors such as maintaining the body weight, increasing physical activities, having an adequate and balanced diet, quitting unhealthy habits, and supporting diabetes patients' self-management among effective interventions (IDF Diabetes Atlas,2019; ADA, 2020c).

Motivational Interviewing (MI), which is one of the major initiatives for individuals' developing healthy lifestyle behaviors and supporting individual competence, is a client-centered type of interview which makes suggestions to ensure a change of behavior in patients by helping them to find out and solve their problems, help patients to better understand why they change or do not change, which does not offer solutions unless the person decides to change (Miller & Rollnick,2002). Studies showed that MIs provide diabetes control and improve self-management and self-care behavior in diabetes patients (Muslu & Ardahan, 2017; Thepwongsa, Muthukumar & Kessomboon, 2017).

The present study is the second phase of the study in which the diabetes risks of 44 patients with type 2 diabetes were found high or remarkably high according to the FINDRISK scale, which was published earlier. The said study found that diabetes control was not achieved in patients with type 2 diabetes; the individuals failed in disease management (Bulucu-Buyuksoy and Seki-Öz, 2020). Adoption of healthy lifestyle changes and increasing life quality by patients with type 2 diabetes at high risk of diabetes may slow the progression of type 2 diabetes and delay the complications that can develop due to diabetes (ADA, 2020a). In the second phase, the study aims to determine the impact of motivational interviewing conducted with individuals with type 2 diabetes, who were found to be at a high risk of diabetes in the previous study, on the individuals' healthy lifestyle behaviors and life qualities.

Materials and Methods

Study settings and samples: The present study is the second phase of the study "A preliminary report of type 2 diabetes risk and related factors" (Bulucu-Büyüksoy and Seki-Öz, 2020). The sample of the study consisted of 44 individuals with type 2 diabetes who were found to be at a high risk of diabetes in the study which was conducted in the first phase. The study was conducted in a pre-test, post-test, semi-experimental design in a single group.

Phone calls were made by using the phone numbers that were received in the previous study to 44 individuals who were included in the experimental group. Individuals were informed about the second phase of the study, and they were invited to the interviews at the hospital. 14 individuals who did not agree to participate in the study, who did not attend any of the sessions, and who filled out incomplete data collection forms were excluded from the study. The study was completed with 30 individuals.

Data Collection Forms: The data of the study were collected by using the introductory information form, WHOQOL-BREF scale, and HLBS-II scale.

Introductory Information Form: The introductory information form, which was created by researchers, included sociodemographic features such as individuals' age, gender, marital status, education level, occupation, income level, and place of residence.

Healthy Lifestyle Behaviors Scale (HLBS-II): Healthy Lifestyle Behaviors Scale-II was developed by Walker et al. (1987) and was revised in 1996. It was adapted into Turkish in 2008 by Bahar et al. Healthy lifestyle Behavior Scale-II consists of 52 substances and has 6 sub-factors. Sub-groups are spiritual development, health responsibility, physical activity, nutrition, interpersonal relationships, and stress management. The overall score of the scale indicates the healthy lifestyle behaviors score (Walker, Sechrist & Pender,1987; Bahar, Beser, Gordes, et al, 2008). In the present study, Cronbach's coefficient was 0.90.

WHO Healthy Lifestyle Behaviors Scale BREF (WHOQOL-BREF): WHOQOL- BREF scale was developed by the WHO. There are two versions of the scale: long-form (WHOQOL-100) and short-form (WHOQOL-27). The validity and reliability assessment of the WHOQOL-BREF scale in Turkey was conducted by Fidaner et al. (1999). The scale consists of 27 questions and 5 sub-headings. The sub-headings of the scale are general health, physical health, psychological health, social relationships, and environment. Each question was rated between 1-5 points. Five field scores were calculated by using the questions except the first two (Fidaner, Elbi, Fidaner, et al, 1999). Cronbach's coefficient was 0.86 in this study.

Interventions: In the literature, it is stated that the interviewing groups must consist of 3-20 people for the group interviews to be effective (Türk Psikiyatri Derneği, 2019). Thus, before proceeding to the implementation phase of the study, 30 individuals who agreed to participate in the study were randomly divided into two groups of 15 people to communicate adequately and spare time for each of them.

During the implementation phase of the study, six interviews were held with each group every two weeks for three months, each of which lasted for 120 minutes. The meetings were held between 03.02.2020-26.04.2020 in the hospital located in the city center, in the meeting room for about a hundred people, where the necessary equipment for the presentation was available. Interviews were conducted by a researcher with competence and certification in the MI field.

In the MI, the consultant used their skills of showing empathy, developing discrepancy, breaking the resistance, and supporting self-sufficiency (Thepwongsa et al.,2017). In the present study, strategies were followed for building motivation for change in the first phase, then participants' change speeches, and finally strengthening commitment to the achieved change by using the MI skills at each session

(Thepwongsa et al.,2017; Seki Öz, 2020). The participants were supported to take an active role and express themselves during the sessions. Participants' general tendencies and attitudes towards the subjects of their current healthy lifestyle behaviors, the purpose of life in their daily lives, social relationships, healthy diet, regular exercise, taking medication, and monitoring blood sugar were defined. In light of this information, the interviews were conducted by considering the participants' personal value judgments and cultural trends. For example, while speaking of stress management, conflicts with neighbors, relatives, spouses, eating more to cope with stressful situations, and alternative behavioral changes to manage these situations were discussed. Food culture which is dominant in the region in terms of nutrition, tendency to consume bakery products and sugary foods (mostly bread), negative effects of religious holidays when people consume high amounts of desserts, changes of dietary habits which are appropriate to the culture instead of these habits were discussed. Instead of the sedentary life that exists when it comes to regular exercise, opportunities for change that match their lifestyle and engaging in sports in the home or neighborhood where they live were discussed. Daily life practices such as doing housework that hinders regular medication usage and following blood sugar, working for long hours, and under heavy conditions, fulfilling responsibilities related to other family members were discussed. During the interviews, a presentation on the effective management of diabetes and healthy lifestyle behaviors, which was prepared by researchers in light of the literature, was used (ADA, 2015; Soo & Lam, 2009). In the presentation, general information about the importance and complications of diabetes, physical activity, healthy eating, regular usage of medication, blood sugar monitoring, diabetes, and stress relationship, having a purpose in life, and stress management was covered. At the end of the interviews, individuals were given a training manual, which was prepared by the researchers, containing the subjects that were described in the presentation.
Table 1 shows the subject flow of MI sessions conducted with the individuals.

Data Collection: Data of the study were collected before the interviews started in the first session and after the interview ended in the sixth session.

Ethical Dimension of Study: Before the implementation of the study, the institution's permission from the hospital, and the Ethics Committee's permission from the Clinical Research Ethics Committee of the Faculty of Medicine of Kırsehir Ahi Evran University, numbered 2020-02/08 and dated 11.02.2020 were acquired. Verbal and written consent was acquired from the individuals who participated in the study after providing information about the objective and content of the study.

Statistical Analysis: The data were evaluated in a computer environment. Kolmogorov-Smirnov and Shapiro-Wilk tests were used to determine whether the data were suitable for normal distribution. Number, percentage, median, and minimum-maximum values were used for the presentation of the descriptive data. Wilcoxon signed ranks test was used to compare the HLBS and WHOQOL-BREF scale scores of individuals before and after the initiative. The significance level of the statistical tests was $p<0.05$.

Results

The participants' average age was 60.80±7.51, 33.3% of the participants were women, and 66.7% of them have held elementary school diploma degrees, 93.3% of them were married, 53.3% of them were retired. 73.3% of the state that their income is sufficient. 26.7% of the participants have lived in rural areas. (Table 2)

The results in Table 3 indicate that the average scale scores in the pre-test and post-test. The healthy lifestyle behavior scale pre-test total score median was 128.00, the post-test total score median was 139.00, and the difference was statistically significant ($p<0.001$). The difference between the pre-test post-test median scores in all lower dimensions of the healthy lifestyle behaviors scale was statistically significant ($p<0.001$). The healthy lifestyle behavior scale pre-test total score median was 86.00, the post-test total score median was 93.00, and the difference was statistically significant ($p<0.001$). The difference between pre-test, post-test median scores in all sub-dimensions of the quality of life scale was statistically significant ($p<0.001$). (Table 3)

Table 1 The process of motivational interview stages

Sessions	Subjects that were covered
First session	Introduction, application of introductory information form and scales, providing general information about type 2 diabetes
Second session	Coping with stress, having a life purpose
Third session	Doing regular physical activity
Fourth session	Healthy eating, the ability to choose healthy foods, adequate and balanced nutrition
Fifth session	Monitoring blood sugar and regular medication usage
Sixth session	General revision and evaluation, re-application of scales

Table 2 Comparing the participant's personal and social characteristics data (n = 30)

Characteristics	Dataset	
Age *	60.80±7.51	
Gender **		
Women	10	33.3
Men	20	66.7
Education level**		
Elementary	20	66.7
High school	10	33.3
Marital status**		
Married	28	93.3
Single	2	6.7
Job **		
Housewife	10	33.3
Officer	4	13.3
Retired	16	53.4
Income level**		
Insufficient	12	40.0
Sufficient	14	46.6
High	4	13.4
Place of rest**		
Rural	8	26.7
Urban	22	73.3

* mean ± SD * * n(%)

Table 3 Compare the average of pre-post test groups (N = 30)

Scores	Pre-test	Post-test	Test** *p* value
HLBS-II total score*	128,00 (104.00-154.00)	139,00 (119.00-173.00)	-4.788 0.000
WHOQOL-BREF total score*	86.00 (63.00-98.00)	93.00 (70.00-109.00)	-4.795 0.000
Sub-dimension of HLBS-II			
Spiritual*	25.00 (21.00-34.00)	27.00 (22.00-34.00)	-3.715 0.000
Nutrition*	22.00 (15.00-26.00)	25.00 (20.00-30.00)	-4.804 0.000
Physical activity*	12.00 (8.00-22.00)	12.00 (8.00-23.00)	-3.042 0.002
Health responsibility*	23.00 (14.00-35.00)	26.00 (21.00-35.00)	-4.642 0.000
Interpersonal relationship*	28.00 (20.00-33.00)	30.00 (24.00-36.00)	-4.317 0.000
Stress management*	20.00 (11.00-25.00)	20.00 (13.00-28.00)	-3.941 0.000
Sub-dimension of WHOQOL-BREF			
General health	5.00 (3.00-7.00)	6.00 (4.00-8.00)	-3.246 0.001
Physical health	22.00 (11.00-31.00)	24.00 (17.00-34.00)	-4.043 0.000
Mental health	20.00 (12.00-26.00)	21.00 (14.00-27.00)	-4.342 0.000
Social relationship	10.00 (5.00-14.00)	11.00 (7.00-14.00)	-2.424 0.015
Environment	27.00 (23.00-36.00)	30.00 (24.00-39.00)	-4.165 0.000

* Median (Min-Max) **Wilcoxon signed ranks test

Discussion

In the first phase of the study, 84.6% of individuals diagnosed with type 2 diabetes were found to have a high/very high risk of diabetes according to the FINDRISK scale, which was interpreted as individuals were at risk of complications of diabetes, although diagnosis and treatment of type 2 diabetes were provided (Bulucu-Buyuksoy & Seki-Oz, 2020). MI is known to be an effective initiative to gain healthy lifestyle behaviors to keep type 2 diabetes under control, prevent complications, and premature death (Gabbay, Anel-Tiangco, Dellasega, et al., 2013). In this context, in the second phase of the study, the effect of MI, which was applied to individuals with type 2 diabetes at high risk of diabetes, on healthy lifestyle behaviors and quality of life of individuals was evaluated.

In the study, the difference between the pre-test and post-test total score and the median score of all sub-dimensions of the healthy lifestyle behaviors scale of individuals was statistically significant ($p<0.001$). Accordingly, it can be said that motivational interviews improve the healthy lifestyle behavior of individuals (Table 3). Similarly, a study conducted by diabetes nurses to provide individuals at risk of diabetes with healthy lifestyle behaviors by using the MI technique found that the risk of diabetes of individuals in the experimental group decreased significantly compared to the control group (Walters, Courtney-Pratt, Cameron-Tucker, et al.,2012). A systematic review examining the effectiveness of MI for diabetes management found that MI was promising in providing behavioral change, especially in nutrition (Ekong & Kavookjian, 2016). In the present study, it was also found that the median of the nutrition sub-size score of the healthy lifestyle behavior scale of individuals increased by 3 points (Table 3). Another study found that MI techniques that were applied to adults who reported that they were not active enough in an outpatient clinic increased individuals' self-sufficiency in physical activity (Barrett, Begg, O'Halloran, et al., 2018). Although there was a statistically significant difference in the present study, the healthy lifestyle behavior scale physical activity sub-size scores remained the same (Table 3). This may be since the participants had difficulty in changing their old habits, as they were mostly of advanced age, a third of them were women and housewives; therefore, they did not sufficiently increase the frequency of physical activity. Furthermore, the fact that it was winter during the study period, snowing, raining, and icing may have prevented individuals from doing physical activity. A study found that MI increased the adaptation of individuals with diabetes to healthy lifestyle changes and improved self-care (Celano, Gianangelo, Millstein, et al., 2019). The present study showed that the healthy lifestyle behaviors scale's health responsibility sub-dimension score increased by 3 points, and the individuals participated in the disease management. In the present study, individuals' stress management sub-dimension score median remained the same, while their interpersonal relationship and spiritual sub-dimension scores increased (Table 3). A study reported that stress factors and individualized psychosocial approaches improved patients' self-management skills in chronic disease management (Williams & Manias, 2014). In the present study, it can be said that the interviews improved individuals' interpersonal skills; however, longer and intensive interviews are necessary to create a more significant change in stress management.

The subjects in the MI sessions in the present study were covered by considering the individuals' personal value judgments, the dominant culture in the society, and their daily life practices. A study found that MIs were not effective in encouraging healthy lifestyle behaviors in South Asian individuals at risk of diabetes, and most of the individuals did not continue interviews; it was emphasized that cultural characteristics must be considered for the interviews to be effective (Vlaar, Nierkens, Nicolaou, et al., 2017).

Additionally, a systematic review suggested that the number, content, and duration of the sessions be structured to create behavioral change, an adequate number of self-management behaviors be determined, and the interviews be conducted by consultants who are competent in MI, and the MI protocols are applied (Soderlund, 2018).

Accordingly, it can be said that in the present study, inclusion of the importance of diabetes, nutrition, exercise, and stress management sessions, planning the sessions according to the participants' personal and cultural characteristics, and the MI competence of the researchers who conducted interviews contributed to a significant change in healthy life behaviors.

Moreover, the attitudes of progressing with the participant, being client-centered, empathic understanding, and not being judgmental made the change easier by encouraging the individuals to

raise awareness, develop discrepancy, break the resistance, and support self-sufficiency.

In the study, the impact of MI sessions on life quality was evaluated, the difference between the scales' total score of pre-test and post-test and median of all dimensions was found statistically significant. Accordingly, it can be said that MIs improved the individuals' general health, physical health, mental health, social relationships, and environment sub-dimensions. (Table 3) Similarly, a systematic review showed that MI is a promising intervention for resolving dissonance in chronic diseases and improving life quality (Schaefer & Kavookjian, 2017). A systematic review that examined the impact of MI on glycemic control emphasized that MI could improve life quality as it is a method that strengthens and supports behavioral change, self-care, and problem-solving skills (Concert, Burke, Eusebio, et al., 2017).

During the MI sessions in the present study, the attempts to lead the individuals for stress-management, having a purpose in life, and taking responsibility for their wellness may have improved their life quality. Additionally, the positive change in individuals' healthy lifestyle behaviors under the study may also have improved their life quality.

The results of the present study showed that MI, which was conducted with type 2 diabetes patients at high risk of diabetes, improved the individuals' healthy lifestyle behaviors and life qualities. Therefore, it can be said that MI is an effective technique in gaining healthy life behaviors and improving life quality.

The fact that individuals' personal value judgments and cultural characteristics were considered in MI sessions may also have increased the effectiveness of the interviews. In agreement with these results, it is recommended that studies be conducted that examine the longer-term effects of MI in larger groups of participants and both diabetes and other chronic diseases.

Strengths and Limitations

The strength of the study was that it was conducted by researchers who understood the current cultural structure, with observations and experience in the factors that affect disease management in type 2 diabetes patients.

In the study, there was no follow-up on whether healthy lifestyle behaviors continued after the completion of the interviews. At this point, whether the impact of MI on healthy lifestyle behavior and quality of life in the study was permanent or not was evaluated as a limitation of the study.

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