The compliance of the web based remote training and consultancy on individual's treatment having suffered myocardial infarction and its effects on well-being: Short Communication

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Objective:

To determine the compliance of the web-based remote training and counselling, required by the individuals suffering from myocardial infarction (MI), for their treatment and its effects on the functionality and wellbeing of the individual with some parameters determined by means of virtual platforms and information technologies.

Study Design:

An experimental study. Place and Duration of Study: Two hospitals in Sakarya, Turkey, from 2015 to 2016.

Methodology:

The study population included individuals being treated due to acute MI in the hospital. One hundred and twenty individuals were divided into two groups to receive intervention (n=60) and control group (n=60). The data have been collected via Patient Information Form, The Myocardial Infarction Dimensional Assessment Scale (MIDAS) and Patient Follow-up Form.

Results:

The test and control groups' demographic data were homogenously distributed. At the discharge, the MIDAS total score average was 30.0 for the control group and 26.43 for the test group. These values were determined as 28.57 for the control group and 13.57 for the test group at 3 months (p<0.001).

Conclusion:

Web-based remote training and counselling prepared the individuals after myocardial infarction to the treatment and their well-being in a positive way.

Key Words:

Counselling, Patient training, Well-being, Myocardial infarction, Web-based remote training, Compliance to treatment.

INTRODUCTION:

Myocardial infarction (MI) has the highest incidence and mortality rate among cardiovascular diseases (CVD). Mortality in MI is usually seen within the first three months after the discharge. It decreases with the management of risk factors resulted by health behaviours and the compliance with treatment after discharge. The only way to achieve behaviour change is to raise awareness and educate the individual.1-4 Zahid et al. has shown that people with low knowledge score are at a greater risk of developing MI (OR=3.73). They emphasise that counselling and training can help to manage as well as prevent heart disease by imparting knowledge about MI.5

Cardiac rehabilitation is recommended after MI. However, it is not possible for every individual to benefit from the rehabilitation due to the absence of units such as cardiology and intensive care in some provinces, high density of the number of patients, priority of urgent cases, transportation issues and geographical situations. In this case, it is suggested to use web based training and counselling programmes with phone as an alternative to training in units where rehabilitation is not possible.6-9

Developments in information technologies have broadened the boundaries of internet support and made it accessible in everywhere. Internet-supported and webbased distance training is advantageous to reach wide mass, to provide user an interactive, flexible and efficient information environment, to provide health information for both healthy and sick individuals and to contribute to the care of individuals after discharge in chronic health problems.6,9 It has been shown through various studies that the use of technology and internet in the training of individuals with some chronic diseases is beneficial.7,9

Cajandin stated that the planned discharge training and phone counselling is an application that make positive patient outcomes and improved quality of life.4 Clark et al. found in their study comparing routine home-based rehabilitation programmes such as web-based training,1 tape recordings, phone calls, home visits etc. that there were significant differences between quality of life and risk factors.

In this respect, this research was planned to determine the effect of web-based distance training and counselling on the compliance to treatment, on the functionality and well-being of the patients who had myocardial infarction for the first time.

METHODOLOGY:

It was an experimental study with the pretest-posttest repeated measurement and a control group, conducted between 2015 to 2016 in two hospitals in Sakarya in Turkey with individuals who were on MI. For the determination of the number of samples, Turkish Version of Myocardial Infarction Dimensional Assessment Scale (TR-MIDAS): Reliability-Validity Assessment" was taken into consideration.2 When the averages were obtained in this study, with the assumption of type 1 error (&) 0.05, second type error (\square) 0.20, the sample size was calculated both for experiment and control groups as 60, in a total of 120 individuals who had MI. Assigning the experimental and control groups, sets up method was used.

Randomisation method, which was designed using (http://www1.assumption.edu/users/avadum/applets/ Ra ndAssin/Groupgen.html) computer programme, was used to determine whether the individuals meeting the sampling selection criteria be included in the experiment or in the control group. Sample selection criteria were patients with an acute MI for the first time, undergone coronary revascularisation or medical treatment, being in stage 1 according to Killip Classification, and having a stable health condition.

In addition to the sampling criteria for the experiment group, the general inclusion criteria are having a working computer, internet and phone access at home and being able to use the computer and the web-based remote training programme.

Sampling exclusion criteria were plan of coronary artery bypass grafting and failure to implement the computer and web-based remote training programme.

There were three hypotheses. Hypothesis 1 (H1) was that metabolic control of the individuals, who undergone MI with web-based remote training and counselling, is better compared to the training booklet applied individuals. Hypothesis 2 (H2) was that treatment adaptation for the individuals with web-based remote training and counselling is better compared to the training booklet applied individuals. Hypothesis 3 (H3) was that the level of well-being of the individuals with web-based remote training and counselling is higher compared to the training booklet applied individuals.

Patient Information Form (PIF), MIDAS and Patient Monitoring Form (PMF) were used for data collection. PIF was prepared by the researcher in the light of literature information (age, education, gender etc.). MIDAS, which evaluates the patients' well-being after MI, accordingly, the quality of life, was developed by Thompson et al. and adapted to Turkish language by Uysal and Özcan.2 Including blood glucose, BMI, total cholesterol, LDL, HDL cholesterol, triglyceride parameters, PMF was used in order to evaluate individual's adaptation to the treatment.2

MIDAS is a 5point Likerttype scale consisting of a total of 35 items measured in 7 subscales. The increase in scores indicates that the perceived wellbeing situation deteriorates. In this study, the high range of Cronbach alpha values (0.72-0.94) showed that MIDAS total and subscales is a reliable tool for this study.

Using current literature, a training booklet consisting of visual and written texts for the control group, and a webbased distance training programme for the experimental group was prepared by the researcher in parallel with content and scope.10-13 The training contents were presented to nine experts in terms of the conformability before implementation was placed on the web pages of the hospitals, to facilitate the access of the individuals. The web page titled "After the First Heart Crisis" contains six menus including home page, contents, instructors, application steps, and communication sections.

After the activation with the user name and password defined for each person; in user page, the interface page, which the subject headers and question links are included, is that the active participants can see, and the announcements can be followed up was opened.

The first presentation began with the video "Introduction to Training on Heart Diseases" including brief information on the use of the programme and continued with seven training titles (the structure of heart and MI, drug use, nutrition, physical activity, sexual activity, management of risk factors 1-2) and the completion test consisting of questions prepared by the researcher to evaluate the effectiveness of the study. It was enough to click on the title so that the user could listen to the title of the first topic. Taking adult training and time management into consideration, the presentations were set to take 10-15 minutes.

During the day when the patient would be discharged, PIF, PMF and MIDAS were collected from experimental and control groups. A training booklet was given to the individuals in the control group and the physician control date in the third month was determined in order to get the data belonging to the second follow-up.

The experiment group was informed about the webbased distance training programme on the day they were being discharged. After about 30 minutes of presentation, the individual was asked to watch the first subject in the training programme with researcher.

The experiment group was counselled about drug use, nutrition, physical activity, etc. over the phone until the third month after discharge. During this period, the individuals were followed by the researcher in terms of their access to the web page, the duration of the questionnaire, and the length of time the questions were answered.

The data were collected with PMF and MIDAS scale again three months after the discharge from experimental and control groups.

Prior to commencing the study, permission was taken from the Ethics Committee of the Faculty of Medicine of the Sakarya University (29.05.2015/6710). In addition, the individuals, who will constitute the research sample, were informed about the objective, duration of the study and what is expected from them. Their consent was taken to participate in the study in consideration of the willingness and voluntariness policy.

Findings gathered from the study were evaluated by transferring them to the IBM SPSS Statistics 22 software. While the study data were evaluated, it was seen that the numerical variables did not fit the normal distribution. Kolmogorov-Smirnov test was used to evaluate whether the distribution of scales were normal. The scales were presented as the mean ± standard deviation or median (IQR). Frequency distributions were given for categorical variables, Mann-Whitney U-test was checked for difference between two independent groups. For MIDAS scale's total and sub-dimension reliabilities, the Cronbach's Alpha values and for the difference between two independent categorical variables, Chi-square and McNemar tests were examined. The difference between numerical variables was evaluated by Spearman test and the significance was considered as p < 0.05. Three months after the discharge, there was no statistically significant difference found between the control and experimental groups in terms of median values of glucose, AST, total cholesterol, LDL, HDL, CK- MB, sodium, potassium, calcium, BUN and creatinine (p=0.297, 0.094, 0.347, 0.096, 0.705, 0.952, 0.260,

0.527, 0.450, 0.385, and 0.672, respectively). There was a statistically significant difference found in terms of ALT, triglyceride, CRP and uric acid median values (p =0.005,<0.001, 0.007, and 0.002 respectively, Table II).

In the third month of discharge, in the control and experimental groups, it was observed that the number of individuals who were obese decreased and but it did not create any statistical difference (p=0.829 and 0.349, respectively) and similarly in groups did not create any statistical difference (respective values were r=0.113, p=0.389, and r=0.085-p=0.521, Table III).

There was no statistically significant difference between the groups in which median values of MIDAS subscale and total score was medium-level in discharger (p=0.059, 0.657, 0.466, 0.577, 0.072, 0.376, 0.451, and 0.871, Table IV).

Three months after the discharge, there were significant differences between control and experimental groups in terms of anxiety of medication, drug side effects, physical activity, insecurity, emotional response, addiction and MIDAS total score median were found in favour of the experimental group (respective p-values were 0.019, 0.011, <0.001, <0.001, <0.001, <0.001, <0.001). In terms of nutrition type sub-score median, there was a significant difference was found in favor of the control group (p <0.001, Table IV).

RESULTS:

The average age of the participants was 54.09 ± 11.02 years. They were mostly male, married, literate, had primary school graduate, not working (unemployed and

retired), eating mixed diet properly but not exercising and had no training about myocardial infarction. It was determined that the demographic data of the experimental and control groups showed a homogeneous distribution (p-values=0.159, 0.068, 0.163, 0.283, 0.067, 0.413, 0.171, 0.083, and 0.609 respectively, Table I).

There was no statistically significant difference between control and experimental groups in terms of median values of glucose, AST, ALT, total cholesterol, CK-MB, sodium, potassium, BUN, and creatinine (p=0.071, 0.420, 0.051, 0.149, 0.138, 0.792, 0.770, 0.457, and 0.696, respectively). In terms of median values of triglyceride, LDH, HDL, CRP, calcium and uric acid, there was a statistically significant difference at discharge period (p <0.001, 0.027, 0.001, 0.005, <0.001, and 0.019, respectively).

DISCUSSION: Median values of the designed parameters of the experiment and control groups were observed to begin to fall in both groups due to the compliance of the treatment in first three months after discharge (Table II). After the discharge, it was observed that the control group had better metabolic control (cholesterol and electrolyte values, renal functions) by experiment group; however, the recovery has not continued at the same rate after the 3rd month metabolic control of the experiment group were observed to recover faster (H1).

In a similar study conducted by Vernooij et al.,14 after MI, between experimental and control groups were determined that there was no significant difference between the groups in terms of cholesterol, BMI, kidney function and glucose; however, blood values have tended to decrease faster in the experimental group. Lear et al.,15 who applied longer observation have determined that the cholesterol and CRP levels of individuals from experimental group which included web-based distance training and control group which invited to the routine physician control were significantly different in 4th and 10th months. Çevik et al.16 stated in their study that the health behaviours of the individuals with type 2 diabetes after the training, face-to-face and phone counselling improved, the risk factors were observed to decrease and metabolic control was established; they also emphasised the importance of the counselling as well as the training.

CONCLUSION:

Web-based distance learning and counselling have positive effects on individuals with myocardial infarction, in treatment compliance, in acquiring health behaviours, in improving their well-being, and thus their quality of life. It may be advised to use them as an alternative to traditional training practices in the form of booklets, especially for the individuals who could not participate in cardiac rehabilitation and for the individuals who could not use the computer or have no internet connection. It may be advised to conduct studies which will include longer duration of follow-up.

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