



The Evaluation of Hospital Discharge Plan effects on the Self-caring Ability of the Patients Suffering Type-2 Diabetes: A Randomized Clinical Trial

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ABSTRACT

Diabetes is one of the chronic diseases causing the deaths in human societies. Since the patients suffering diabetes are prone to many complications, self-care will be one of the most effective ways to prevent these complications. The current study aimed at evaluating the effect of implementation of hospital discharge planning on the self-care ability of the patients suffering type-2 diabetes in the hospitals supervised by Shiraz Medical University in 2013. The current study is a semi-experimental study of clinical trial type. The participants were 66 patients with type-2 diabetes which were divided into case (33 patients) and control (33 patients) groups. For the case group, the discharge plan was performed using oral instructions, booklet, and telephone counseling while the patients in the control group received routine care. The self-caring abilities of the patients were measured using a standard questionnaire pre- and post-intervention. The descriptive and analytical statistics tests through SPSS16 were used for data analysis. The average score of the self-care in the control group was $23/17 \pm 48/69$ pre-test and $17/12 \pm 72/47$ post-test which were statistically significant. The average score of the self-care in the case group was $23/17 \pm 48/69$ pre-test which was increased to $17/12 \pm 72/47$ post-test ($p < 0.001$). There were no significant differences between the scores of self-care between the case and control groups before the implementation of discharge plan ($p > 0.05$). After the implementation of the discharge plan, there were statistically significant differences in scores of self-care ability between the case and control groups. Also, there was a significant relationship between the self-care ability and the patients' income. The results of the study indicated that the implementation of discharge plan for the diabetic patients can lead to an increase in self-care abilities. Accordingly, it is recommended this low-cost method be used for improving the patients' self-care abilities and consequently reducing the complications associated with diabetes.

Keywords: type-2 diabetes, discharge plan, self-care ability.

INTRODUCTION

According to the statistics of 2000, it was estimated that there are 171 million patients suffering diabetes worldwide, which is expected to exceed 360 million by 2030. It is estimated that more than 25.8 million people in America have diabetes. Diabetes is the cause for more than 3.8 million deaths worldwide, i.e. a death every 10. Now there are more than 30 million patients with diabetes in our country who if necessary actions are not to be made, will increase to 7 million according to World Health Organization (WHO). Currently, diabetes is the fifth leading cause of death in the world. The vast changes in lifestyle, industrialization, demographic transition and the growing aging of the societies besides increasing obesity and sedentary lifestyle are among the factors affecting the growth in the number of diabetic patients.

Chronic diseases undergo vast changes due to the duration and intensity, besides the physical, psychological, social, economic and quality of life aspects. Serious disorder in human performance impairs a person's ability to care for themselves permanently or temporarily. The chronic nature of diabetes mellitus, in addition to high mortality, is the individual, the familial, and the financial difficulties associated with it. Improvement of self-care behavior is the first step towards helping patients to control their disease. [1]

The concept of caring oneself was first introduced in 1959 by Orem. In this theory, each person has the talent and strength of self-care which can be changed into actual, purposeful, and deliberate self-care roles and behaviors through designing special systems and programs.

International consensus is that self-care plays an important role in caring the chronic disease. [2]

Any improvements in the treatment results depend on the patient ability for caring himself and managing the consequences of the treatment. If the patients can take care of themselves properly, accept the medication and after discharge program, and the social support is performed properly, more than 50% of the readmissions can be prevented (Abootalebi Darya Sari *et al*, 2011). Since the self-care status of the people is the most important factor in controlling the diabetes, it needs more evaluation.

The nurses as the key and main members of care and treatment team play a very important role in diabetic patients' self-care. The nurses can increase the diabetic patients' self-care abilities using different methods and by doing so, help them adapt and adhere themselves with the treatment. [4]

The discharge planning is one of the effective nursing interventions which includes forecasting the potential complications of the disease and preventing their occurrence, helping the patients with learning the self-care techniques during the hospitalization, cooperating with the patient for designing a model for home care, and ultimately, if needed, referral and follow-up by the patient and family. [3]

The discharge planning begins from the very time of the patient's admission and emphasize on the prediction of the patient and his family needs and planning for meeting these needs after the discharge from the medical centers. The key to success in the discharge plan is the exchange of information between the patients, caregivers and those who bear responsibility for patient care. An efficient discharge program gradually helps to continue the caregiving with the least amount of stress.

The structure of discharge plan is based on caring, supportive, preventive, and educative principles, besides coordination between team members for timely referral and follow-up. The discharge plan is an opportunity for the patient to be prepared for self-care and treatment follow-up. Undoubtedly, the last minute instruction can never replace the training, counseling and prevention throughout the patient's stay in hospital from the date of admission until several months after the patient's discharge to home. [5,6]

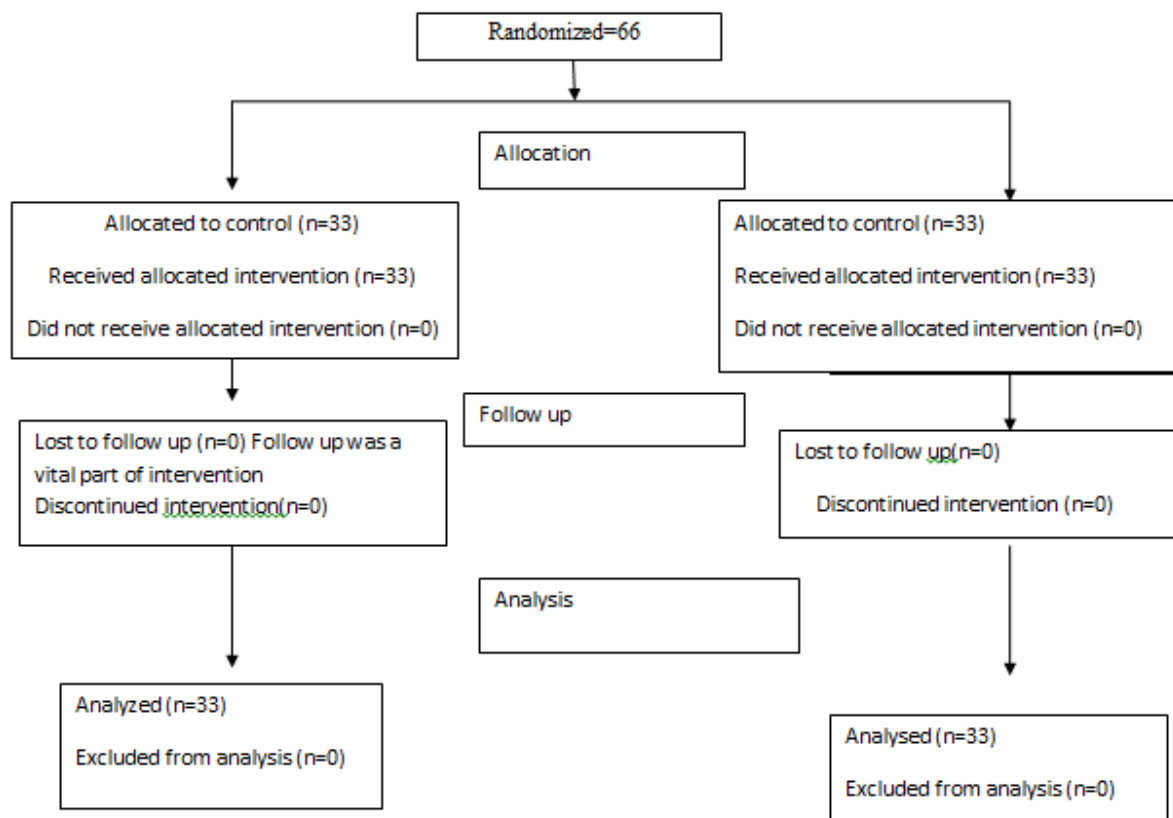
Studies have shown that only a small share of chronic diseases such as diabetes got health care by specialized personnel and the majority of diseases are managed by the individual and his family. Self-care-based interventions in diabetes lead to changes based on attitudes and beliefs, improving the health-related information, develop the health-related and performance. Activities related to lifestyle, such as physical activity, nutrition, controlling or monitoring blood sugar, and caring are often used as the variables of self-care.

Given the importance of continuity of care and self-care in patients with diabetes and also a lack of studies in this field in our country in addition to improper implementation of discharge plan, the current study aimed at evaluation of the effects of discharge plan implementation the diabetic patients' self-care abilities. [7]

The current study is a quasi-experimental clinical trial which was conducted in 2014, in the hospitals supervised by Shiraz Medical University. The participants were randomly divided into case and control groups with purposeful allocation. The case group were given the SDSCA questionnaire to fill in. Afterwards, they were provided with the cares based on increasing the self-care abilities including diet, foot care, and following the medication use, from the admission in the hospital and then the program continued with two telephone calls and training sessions for a month. After one month, the patients filled in the questionnaire again. On the other hand, the control group was provided with routine cares (without phone calls and training sessions). [8] This group also filled in the SDSCA questionnaire

on the admission to the hospital and one month later repeated the task. The inclusion conditions for the study were blood sugar above 126 milligrams per deciliter, age between 20 to 74 years old, mental health, understanding of time and location, access to phone, full consent for participation in the study, the ability to remind the last week's activities, lack of speech, hearing, and visual disorders. The exclusion criteria were the diseases that make difficulty for the patient to continue the participation, creation of a critical situation for the disease, patient not willing to participate, and the patient's death. The participants (N=66) were purposefully and randomly chosen using the following formula:

$$n = \frac{(2s^2)}{d^2} (Z_{1-\alpha/2} + Z_{1-\beta})^2 \quad (d=0.5, s=0.7, \alpha=0.05, \beta = 0.2)$$



The data collection instrument for the current study were the demographic data questionnaire and the Summary of Diabetes Self-Care Activities (SDSCA) questionnaire which was developed by Tobert (2000) and included 15 items graded from 1 to 7 according to Likert scale. This questionnaire addressed the patient's passed week. Several items such as physical activities, the frequency of carbohydrate use, the frequency of fatty foods use, foot care, and medicine use during the past 7 days were asked. The number of the days is taken as the self-care score. In case these items were followed all the week long, the ability was higher and if they were not performed any day of the week, the self-care ability was lower. [9]

The Validity or Scientific Credit of the Questionnaire: the diabetic patients' self-care questionnaire is an international and standardized questionnaire. Also, the validity and reliability of this questionnaire was approved by Vosughi et al in Iran. [10]

Reliability or Scientific Trustfulness: with the correlation coefficient test, the correlation coefficient was calculated as r=0.78. The internal consistency was approved as 0.71 by alpha-Cronbach . In this questionnaire, if the

patient follows self-care behaviors in all the days of the week, the score will be 7 and if he does not follow, the score will be zero.

Data Analysis: the SPSS16 was used for data analysis. Also, the paired t-test was used for determination and comparison between the average scores of self-care ability in case group, pre- and post-intervention.

Limitations: sometimes, the patients forgot what they did during the past days, thus the accuracy of the responses was reduced. It is suggested the questionnaire be filled in at home. The costs and the price of Glucometer kit affected one of the factors determining the self-care ability. [11]

Findings:

Table 1

Group	Gender	Control		Intervention		p-value	x
		Frequency	Percentage	Frequency	Percentage		
Male		10	30.3	14	42.4		
Female		23	69.7	19	57.6	0.306	1.048
Marital status		32	96.9	28	84.9		
Single		1	3.1	5	15.1	0.087	2.933
Married		10	30.3	10	30.3		
Primary school		9	27.3	9	27.3		
Secondary school		6	18.2	3	9.1	0.469	5.600
Diploma		4	12.1	6	18.2		
Associate degree		2	6.1	3	9.1		
Unemployed/homemaker		24	72.7	22	66.7		
Worker		2	6.1	3	9.1	0.845	1.398
Working for the government		1	3	3	9.1		
Non-governmental job		1	3	1	3		
Retired		5	15.2	4	21.1		
Less than costs		21	63.6	26	78.8		
Equal to the costs		7	21.2	7	21.2	0.063	5.532
More than the costs		5	15.2	0	0		
Yes		31	93.9	31	93.9		
No		2	6.1	2	6.1	1	
I smoke		1	3	1	3		
I do not smoke		1	3	5	15.2	0.230	2.943
No		31	93.9	27	81.8		
No		14	42.4	18	54.5		
Blood pressure		3	9.1	5	15.2	0.377	6.429
Renal disorder		4	12.1	3	9.1		
Hyperlipidemia		4	12.1	4	12.1		
Thyroid		3	9.1	0	0		
Heart disease		5	15.2	2	6.1		
Osteoporosis		0	0	1	3		
Visiting the dentist							
Yes		6	18.2	7	21.2	0.757	0.096
No		27	81.8	26	78.8		
Visiting the ophthalmologist							
Yes		25	75.8	25	75.8	1	
No		8	24.2	8	24.2		
Diabetes-related training							
Yes		10	30.3	19	57.6	0.026	4.982
No		23	69.7	14	42.4		

Evaluating the demographic variables of the patients participating in the study, it was revealed the highest frequency (37.9%) belonged to 51-60 age group. In terms of gender, the highest frequency (63.6%) belonged to females. In terms of marital status, the highest frequency (90.9%) belonged to married group. In terms of education, the highest frequency (30.3%) belonged to uneducated patients. In terms of employment status, the highest frequency (69.7%) belonged to homemaker/unemployed group and the lowest frequency (3%) belonged to non-governmental jobs. Most of the patients (71.2%) mentioned that their monthly income is less than their costs. Most of them (93.9%) had the health insurance. Most of them (87.9%) had not smoked. Most of them (71.2%) mentioned their disease duration as less than 10 years. The highest frequency (65.2%) belonged to the patients who could not measure their blood

sugar by themselves. Most of them (48.5%) mentioned that they do not suffer any other chronic disease except the diabetes. Most of them (75.8%) mentioned that they visit ophthalmologist for eye examination every year. Most of them (80.3%) mentioned that they visit dentist for every six months. The majority(92.4%) said they do not inject annual flu vaccine. The majority(77.3%) said they test their Hb E1c. The majority (56.1%) said they have not received any training on diabetes so far. [12]

Table 2

Variable	Control		Case		Single t-test	
	Mean	Standard deviation	Mean	Standard deviation	T	P-value
Age	55	9.29	49.33	14.90	1.854	0.069
Disease duration	11.33	8.92	7.57	6.30	1.974	0.053

The t-test indicated that there were no significant differences between the two groups in average age (p=0.069) and disease duration (p=0.053).

Table 2: the average scores of the patients' self-care ability pre- and post-intervention in the case and control groups

Group	levels	Pre-discharge		Post-discharge		Paired t-test	
		Mean	Standard deviation	Mean	Standard deviation	T	P
Single t-test	Control	69.48	17.23	47.72	12.17	7.321	0.001
	Case	62.57	17.89	80.51	14.31	4.770	0.001
	T	0.115		0.001			
	P						

The average score of self-care ability was 69.48 for the control group and 62.57 for the case group, pre-intervention. The t-test indicated that pre-intervention, there were no significant differences between the two groups in terms of self-care ability (p=0.115). However, post-intervention, the average score of self-care ability was 47.72 for the control group and it was 80.51 for the case control. The t-test also indicated that post-intervention, there were significant differences between the two groups in terms of self-care ability (p=0.001). [13]

The paired t-test indicated that for the control group, there were significant differences in terms of self-care ability (p=0.001) pre- and post-intervention. The paired t-test indicated that for the case group, there were significant differences in terms of self-care ability (p=0.001) pre- and post-intervention.

According to the table 3, “the determination and comparison between the average scores of the patients' self-care ability in the case and control groups were set and analyzed in table 13-4. Using the SDSCA questionnaire and the t-test, it was revealed there are no significant statistical differences between the two groups in terms of average self-care ability of patients pre-intervention (p=0.115) and the groups were almost the same. The results indicated that for the control group, the average patients' self-care score was 69.48±17.23 and 62.57±17.89 respectively, with the average and standard deviation. These results are in line with the results of Adib Haj Bagheri et al (2012), Jalilian et al (2011), Khatibian et al, (2013), and Shahbodaghi et al (2012) studies. [1 , 2 . 8 , 9]

According to the table 3, “the determination and comparison between the average scores of the patients' self-care ability in the case group” revealed that based on the results, for the case group, the average patients' self-care score was 69.48±17.23 pre-intervention which was increased to 80.51±14.31 post-intervention. These results are in line with the results of Trozing et al (2005), Ghavami et al (2013), Omid et al (2014), Khandan et al (2011), Khatibian et al (2013), and Khalegh Parast et al (2013) studies. [2 , 3 , 13 , 14]

According to the table 3, “the determination and comparison between the average scores of the patients' self-care ability in the control group” revealed that based on the results, for the control group, the average patients' self-care score was 69.48±17.23 before discharge which was decreased to 47.72±12.17 after routine discharge. According to the paired t-test, there were statistically significant differences between the average scores (p<0.001). These results are in line with the results of Shahbodaghi et al (2012), Ghavami et al (2013), Amiri et al (2014), Khandan et al (2011), and Trozing et al (2005) studies. [7 , 8 , 14 , 15]

According to the table 3, “the determination and comparison between the average scores of the patients' self-care ability in the case and control groups post-intervention” revealed that based on the results, for the control group, the

average patients' self-care score was 47.72 ± 12.17 and it was 80.51 ± 14.31 . Using single t-test it was revealed that there were statistically significant differences between the two groups in term of self-care ability scores ($p < 0.001$). Comparing the self-care abilities between the two groups, one month after the discharge and according to SDSCA questionnaire, this ability was increased for the case group and it was decreased for the control group. These results are in line with the results of Shahbodaghi et al (2012), Ghavami et al (2013), shahabadi et al (2010), Mahmudi et al (2012), Vosoughi Karkazlu et al (2011), Haj Bagheri et al (2012), and hamdzade et al (2012) studies. [3 , 6 , 7 , 15]

CONCLUSION

The results of the current study approve the useful effects of implementation of discharge plan on the type-2 diabetic patients' self-care ability. They also revealed that using a proper discharge plan as a drug-free and low cost program, the physical and psychological complications can be reduced. Thus, the as key members of the caring team, play an important role in training caring the type-2 diabetic patients. They can by designing a proper discharge plan in accordance with the patients' needs, prevent the physical complications, as these cares should be initiated with patients' admission and continued until the time the patient is discharged or even after he/she is discharged.

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