

Evaluation of discharge training given to patients who have undergone heart valve replacement

Kalp kapağı değişimi yapılan hastalara verilen taburculuk eğitiminin değerlendirilmesi

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Background: This investigation aimed to determine the effect of planned discharge training given to patients who underwent heart valve replacement operations on information level, self care capacity, and the problems that may be experienced after discharge.

Methods: Eighty patients, (42 males, 38 females; mean age 49.2 years; range 20 to 65 years) who underwent heart valve replacement operation in the cardiovascular surgery clinic of a training-research hospital between 25 June and 19 December 2007 were enrolled in this semi-experimental study. Forty patients (25 males, 15 females) were allocated to the study group and 40 patients (17 males, 23 females) to the control group. The patients in the study group were given discharge training in line with a training plan, and a training booklet prepared by the investigator was distributed to them. The patients in the control group were given routine training by the attending nurse.

Results: Mean scores of information and self care were found to be higher in the study group than in the control group. It was also established that patients in the control group experienced problems of 'fatigue, weakness, tiredness' and 'bleeding gums' to a higher degree than the study group ($p<0.05$). Although the difference was not statistically significant at this time ($p>0.05$), patients in the control group stated that they experienced problems such as nausea/vomiting, palpitations, fever, sleeplessness, and epistaxis more commonly.

Conclusion: It was established that discharge training was effective in that it enabled the patients to have a higher level of information and self care, to carry out their own care, and to encounter fewer problems after discharge.

Key words: Discharge training; heart failure/epidemiology/etiology/therapy; heart valve surgery; self care.

Amaç: Bu çalışmada kalp kapağı değişimi ameliyatı yapılan hastalara verilen planlı taburculuk eğitiminin, hastaların bilgi düzeyi, öz bakım gücü ve taburculuk sonrası yaşanabilecek sorunlar üzerine etkileri saptandı.

Çalışma planı: Bu yarı deneysel çalışmaya 25 Haziran - 19 Aralık 2007 tarihleri arasında bir Eğitim Araştırma Hastanesi Kalp Damar Cerrahisi kliniğinde kalp kapağı değişimi ameliyatı yapılan 80 hasta (42 erkek, 38 kadın; ort. yaş 49.2 yıl; dağılım 20-65 yıl) dahil edildi. Kırk hasta (25 erkek, 15 kadın) çalışma grubunu ve 40 hasta (17 erkek, 23 kadın) kontrol grubunu oluşturdu. Çalışma grubundaki hastalara, eğitim planı doğrultusunda taburculuk eğitimi verildi ve araştırmacı tarafından geliştirilen eğitim kitapçığı dağıtıldı. Kontrol grubundaki hastalara ise, görevli servis hemşiresi tarafından rutin eğitim verildi.

Bulgular: Hastaların bilgi ve öz bakım puan ortalamaları çalışma grubunda, kontrol grubuna göre daha yüksek bulundu. Aynı zamanda kontrol grubundaki hastaların 'halsizlik-güçsüzlük-yorgunluk' ve 'diş eti kanaması' sorunlarını çalışma grubundaki hastalardan daha fazla yaşadığı saptandı ($p<0.05$). Bu durumda istatistiksel olarak anlamlı olmamakla birlikte ($p>0.05$), kontrol grubundaki hastalar bulantı-kusma, çarpıntı, ateş, uykusuzluk ve burun kanaması gibi sorunları daha fazla yaşadıklarını ifade ettiler.

Sonuç: Taburculuk eğitiminin hastaların bilgi ve öz bakım düzeylerinin yüksek olmasında, kendi bakımlarını gerçekleştirebilmelerinin sağlanmasında ve taburculuk sonrasında daha az sorunla karşılaşmalarında etkili olduğu belirlendi.

Anahtar sözcükler: Taburculuk eğitimi; kalp yetmezliği/epidemioloji/etyoloji/terapi; kalp kapağı ameliyatı; öz bakım.

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Cardiovascular diseases (CVD) occur very frequently and are presently among the leading causes of mortality and morbidity in developing and developed countries. It has been reported that CVD are the most common cause of death, and according to the data of the World Health Organization (WHO), in 2001 approximately 16.6 million people died of CVD.^[1] Cardiovascular diseases involve all diseases of the heart and vessels including hypertension, coronary artery diseases, heart failure, congenital heart anomalies, and diseases of the heart valve.^[1] Diseases of the heart valves occur secondarily in developing countries due to inadequate treatment of beta hemolytic streptococcal infections and their incidence is quite high.^[2] In the Turkey Heart Report, the incidence of rheumatic heart diseases was reported to be 150.000 for the year 2000.^[1]

Diseases of heart valves are treated by medical or surgical methods or both. Medical treatment includes inotropic drugs and diuretics while surgical treatment includes repair of the valve or its replacement in cases when repair does not suffice.^[2,3] Artificial heart valves employed in the replacement of heart valves may be mechanical or biological (tissue), and as biological valves last for a shorter time (10-15 years), mechanical valves are preferred at present. Important complications occurring in patients with mechanical artificial heart valves are thromboembolism and bleeding.^[3] A previous study established that thromboembolism and bleeding account for 75% of the complications occurring after heart valve replacement,^[4] and these complications occur more frequently within six months of the operation.^[5]

Currently, shortening of the hospitalization period after replacement operation leads to the fact that the patient spends most of the recovery period at home. In this period, lack of adequate discharge training given to the patient and the family gives rise to problems in carrying out activities such as movement, nutrition, excretion, respiration, sexual function, sleep and rest, as they do not know how to cope with these problems and experience difficulties in self care. Therefore, patients refer to the hospitals again with complaints such as lack of compliance with diet and drug regimes (especially for complications which may develop in association with anticoagulant treatment), anxiety, depression, and inadequacy in self care.^[6,7] In the study of Jaarsma et al.^[8] it was determined that patients undergoing heart operation experienced such physical and psychological problems as nutrition, decrease in appetite, nausea and vomiting, changes in bowel habits, sleep disturbances, fatigue and activity intolerance, pain, anxiety and depression within six months of being discharged.

In the post operative period, it is important to give information to patients so that they can make decisions

regarding their care and manage their own health.^[9] Although the physical function capacities of patients increase after operation, problems confronted after the operation delay the recovery process and influence self care capacity and quality of life. Therefore, planned discharge training is important for the patients in order that they can cope with problems after discharge.^[7,10] Discharge training increases the quality of care in patients who have undergone heart operations, accelerating the recovery process, and it has many favourable effects on the patient and his or her family. In various studies, it has been reported that planned and systematic patient training enhances the information level of the patients, reduces anxiety, increases self care level and satisfaction, and helps the patients to resume their normal activities after discharge.^[10-13]

In our country, it has been observed that planned discharge training is not given to patients undergoing heart valve replacement. Thus, this study was an attempt to test the following research hypotheses:

- Discharge training given to patients increases information levels and the self care capacity of the patients.
- Discharge training decreases the problems that may be experienced by the patients after discharge.

PATIENTS AND METHODS

Design

The aim of this prospective and semi-experimental study was to determine the effect of training given to patients who underwent heart valve replacement on the information level and self care capacity of the patients and the problems which may be experienced after discharge.

Participation

The study was carried out in the cardiovascular surgery clinic of a training-research hospital. Clinics to be included in the sample were chosen with a random sampling method and one clinic formed the control group and the other the study group. As the clinics opened onto different corridors, the administration was carried out simultaneously. Patients who underwent mechanical heart valve replacement for the first time, were literate, did not have problems in seeing, hearing, understanding, and speaking, and who consented to participate were included in control and study groups.

The study was carried out between 25 June and 19 December 2007 with 184 patients who were hospitalized to undergo a heart valve replacement operation in this period. One hundred and four patients were excluded during selection of the sample: two patients from the study and six patients from the control group who

refused to participate, 33 patients from the study group and 48 patients from the control group who underwent replacement operations again, one patient from the study and two patients from the control group who died during follow-up at hospital, one patient from the study and one patient from the control group who died during follow-up after discharge, and four from the study and six from the control group who did not send the envelope back. The investigation was continued until the planned sample size was reached, and 40 patients were included in the investigation as the study group and 40 patients as the control group.

In the study, of the patients who were admitted to hospital for heart valve replacement operations, who met the study criteria, and who consented to participate, 40 were allotted to the study group and 40 to the control group. Patients in the study group were given training in accordance with training plans and a training booklet developed by the investigator was distributed to them. Patients in the control group were given routine training by the attending nurse.

Instrument

The data of the investigation were collected by the researcher using the 'Demographic characteristics form', 'Information evaluation form', 'Exercise of self-agency care scale', and 'Form for the problems encountered after discharge'.

The demographic characteristics form includes information on the date of hospitalization, age, sex, education status, profession, social security, economic status, marital status, residence, number of people in the family and composition of the family, history of previous operations, presence of other diseases, whether receiving information with postoperative care or not, the content of the information being received, and the subjects on which they want to be informed.

The information evaluation form includes 28 questions aiming to determine the information level of the patients after discharge training.

The exercise of self care agency (ESCA) scale developed by Kearney and Flesicher in 1979 has 43 items. The validity and reliability of this scale in a Turkish setting was tested by Nahcivan in 1993 and adapted by her to Turkish settings by a new rearrangement including 35 items. The scale is a Likert type, five-step scale. The subjects were asked to respond to the statements in the scale. Each statement in the scale was assigned to a score between zero and four. Zero was assigned to the statement 'Does not describe me at all', 1 to 'does not describe me much', 2 to 'do not know', 3 to 'describes me a little', and 4 to 'describes me a lot'. Eight of the statements (3, 6, 13, 19, 22, 26, and 31) are given nega-

tive scores and subtracted from the overall score. The highest score that can be obtained in this scale is 140.^[14]

The form for the problems encountered after discharge includes the status of referring to the hospital again with a problem after discharge, problems encountered after discharge, and attempts by the patients to solve problems.

Discharge booklet

A training booklet was prepared by the investigator referring to several resources. This booklet, entitled 'Your life after a valve replacement operation' includes the following headings:

- Heart valves, heart valve disease, and heart valve replacement operation
- Procedures that have to be carried out during the preparation stage prior to the operation
- Intensive care period after operation
- Admission to the clinic after intensive care and activities that have to be carried out there
- Home programme after operation and activities that should be performed at home (points in which care should be exercised after discharge, anticoagulant treatment, nutrition, wound care, healing of sternum, points requiring care during bathing and sexual intercourse, work life and driving cars, exercises after discharge, the importance of protection against infections, controls, and situations requiring referring to hospital).

Study implementation

The study was conducted simultaneously in the study and control groups. One cardiovascular clinic formed the study group and the other control group. Patients in the study group were administered the 'Demographic characteristics form' and 'Exercise of self care agency scale' on the day they were admitted to the hospital, the 'Information evaluation form' at the time of discharge, and the 'Exercise of self care agency scale' and 'Form for problems encountered after discharge' one month after discharge.

Patients in the study group were given individual training in accordance with the training plan from the day of admission until the day they were discharged. Before the initiation of training, training booklets developed by the investigator were distributed to the patients. The time when training would be given was determined by consultation with the patient and considering the work schedule of the clinic. After each training session, the time of the next session was decided upon and the patient was informed about the subject to be considered. Training was given in an empty room or patient room as

there is no training room in clinics and training rooms are housed in a different building.

Discharge training included two parts, namely training before and after the operation. Training prior to the operation involved information on the structure of the heart and heart valves, heart valve diseases, operation on heart valves and the preparation stage of the operation, intensive care after the operation, and the practices in the clinic. The training after discharge included information on actions during which care should be taken, anticoagulant treatment, nutrition and wound care, healing of the sternum, points in which caution should be exercised during bathing and sexual intercourse, work life, driving, exercises after discharge, the importance of protection from infections, control visits, and conditions which necessitate referral to hospital.

Although the duration of the training given to the patients was determined in parallel with the discharge training programme, it varied between patients. The longest period of training was 210 minutes and the shortest 105 minutes. As the complaints (pain, sleepiness, fatigue) of the patients in the early postoperative period were more frequent, training was commenced on the 3rd day postoperatively and the investigator was present at the clinic between 8.00 and 18.00, seven days a week, throughout the investigation process.

Patients in the control group were given routine training by the attendant nurse. They were administered the 'Demographic characteristics form' and the 'Exercise of self care agency scale' on the day of admission, the 'Information evaluation form' at the time of discharge, and the 'Exercise of self care agency scale' and 'Form for problems encountered after discharge' one month after discharge.

Patients in the study and control groups were given the 'Exercise of self care agency scale' and 'Form for problems encountered after discharge' with stamped addressed envelopes. One month after discharge, patients were contacted by phone and asked to fill in the forms and return them.

Ethical approval

Written approval was obtained from the education plan and coordination board of the hospital where the research was carried out (date: 16 November 2006; no: 1839). The researcher also obtained informed consent from the patients.

Statistical analysis

Statistical package for social sciences (SPSS) for Windows (SPSS Inc., Chicago, Illinois, USA) version 12.0 was used for data entry and analysis. The significance level was set at $p < 0.05$. The Chi square test

and Fisher's Chi square test were used to determine whether the control and study groups were similar in terms of matching independent variables. In the determination of mean self care and information scores, the Mann-Whitney U-test was used, and to determine the relation between them the Pearson correlation test was employed. In the comparison of self care scores between study and control groups, the Wilcoxon Z test was used. Whether there was a difference between the study and control groups with respect to problems experienced was evaluated using the Chi square test.

RESULTS

Of the patients in the study group, 62.5% were male, 27.5% were in the age group 40-49, 57.5% were graduates of primary school, 36.7% had social security with green cards, and 70% had balanced income/expenditure profiles. In the control group, 57.5% of the patients were male, 30% were in the 20-29 and 50-59 age groups, 47.5% were graduates of primary and secondary school, 52.5% were housewives, 80% were married, 42.5% had green cards for social security, and 57.5% had balanced income/expenditure profiles.

Statistical analysis showed that control and study groups did not differ significantly in terms of independent variables. However, they were found to differ significantly in terms of the areas where they lived.

It can be seen from figure 1 that the mean information score of the patients in the study group is 19.8 and that of the patients in the control group is 12.5. The score is higher in the study group with a statistically significant difference ($p < 0.05$).

The mean self care score of the patients in the control group one month after discharge is lower than that of patients in the study group ($p < 0.05$; Table 1). It was also established that the self care mean scores of the patients in the study group increased at one month compared to admission, with a statistically significant

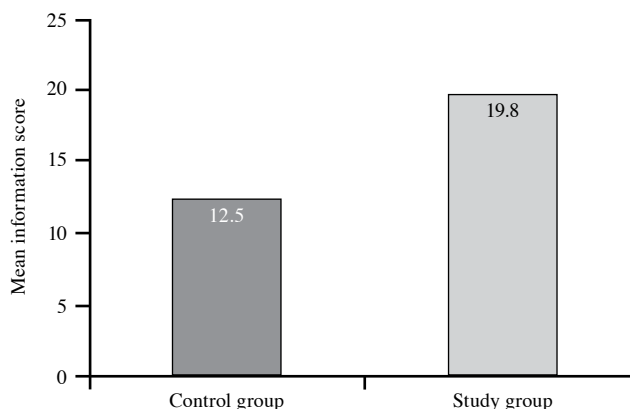


Fig. 1. Distribution of discharge information scores of patients.

Table 1. Distribution of self care scale means of patients

Self care	Control group (n=40)		Study group (n=40)		Statistical evaluation	
	Mean±SD	Mean±SD	t	p		
Timing of scale application	107.0±15.8	109.3±12.1	422.5	0.684		
Admission first month	106.1±16.2	114.2±13.6	314	0.044		

SD: Standart deviation.

difference ($p < 0.05$). However, in the control group, the mean self care score decreased from admission until one month later, albeit with a statistically insignificant difference ($p > 0.05$).

The problems experienced by the patients after discharge are demonstrated in table 2. It was established that patients in the control group experienced problems such as 'fatigue, weakness, tiredness', and 'bleeding gums' more commonly than those in the study group ($p < 0.05$). In addition, patients in the control group experienced such problems as nausea/vomiting, palpitation, fever, sleeplessness, and epistaxis more commonly than the study group, although the difference was not statistically significant ($p > 0.05$).

DISCUSSION

The importance of patient training in helping the patients to make decisions on issues regarding their care and to assume their own care cannot be denied. In vari-

ous studies it has been stated that behavioural changes can be made in individuals and that an adequate training can be given by which anxiety and fears can be alleviated through cooperation with individuals.^[15-17]

Discharge training developed to meet the needs of patients may enhance patients' knowledge and self care behaviour and help prevent the development of additional problems.^[11,18] In the present study, it was established that patients in the study group had higher mean scores of information (Fig. 1) and self care (Table 1) than the control group and experienced fewer problems after discharge (Table 2). In the study group receiving discharge training, mean scores of self care at one month were found to be higher than those in the control group ($p < 0.05$). However, we found no difference between the mean self care scores of patients in the control and study groups at the time of admission to the hospital ($p > 0.05$; Table 1).

In the literature, there are studies showing that patient training is influential in self care behaviour and

Table 2. Comparison of the problems experienced by patients following discharge

Problems experienced	Study group (n=40)		Control group (n=40)		Statistical evaluation	
	n	%	n	%	X ²	p
Fatigue, weakness, tiredness	15	37.5	24	60.0	4.053	0.044
Fear of movement	1	2.5	3	7.5		0.615
Nausea/vomiting	4	10.0	7	17.5	0.949	0.331
Lack of appetite	9	22.5	9	22.5	0	1
Constipation	11	27.5	9	22.5	0.267	0.606
Diarrhoea	1	2.5	1	2.5		1
Chest (incision) pain	15	37.5	19	47.5	0.818	0.366
Shoulder/back pain	33	82.5	28	70.0	1.726	0.189
Palpitation	4	10.0	11	27.5	2.954	0.086
Respiratory difficulty	7	17.5	7	17.5	0	1
Discharge from the chest wound	1	2.5	1	2.5		1
Redness on the chest wound	4	10.0	4	10.0		1
Swelling on the chest wound	1	2.5	1	2.5		1
Fever	0	0.0	5	12.5		0.055
Insomnia	16	40.0	21	52.5	1.257	0.262
Urinary difficulty	1	2.5	3	7.5		0.615
Blood in urine	0	0.0	1	2.5		1
Epistaxis	3	7.5	8	20.0	1.686	0.194
Coughing up blood	1	2.5	1	2.5		1
Bleeding gums	0	0.0	7	17.5		0.012
Headache	1	2.5	3	7.5		0.615

scores of patients. For example, a study by Jaarsma et al.^[19] determined that supportive training interventions increase self care behaviour in patients. Lukkarineen and Hentinen,^[20] in their study on patients with coronary artery disease, investigated self care capacity and factors influencing it and reported that training given was important in the development of self care behaviour related to disease. Likewise, Cebeci^[10] reported that discharge training offered to patients undergoing heart operations enhanced self care capacity. In our study, it was found that patients in the control group had lower scores of self care than those in the study group (Table 1) and experienced a higher degree of problems after discharge (Table 2).

The problems experienced by patients within one month of discharge are demonstrated in table 2. It was determined that patients in the study group experienced problems such as 'fatigue, weakness, and tiredness' and 'bleeding gums' to a lower degree than the patients in the control group ($p < 0.05$). One of the most important complications that may occur due to anticoagulant treatment is bleeding, of which one of the minor types is bleeding of the gums.^[21] Although anticoagulant treatment is a life saving option for patients undergoing replacement of heart valves, errors in treatment and complications may occur. Therefore, the training of the patients is important in reducing treatment-associated complications. Training enables the individual to understand the treatment and its rationale better, reduces misunderstandings regarding treatment to minimum, and enhances compliance with treatment.^[22,23]

Although there was no significant difference between study and control groups with regard to other problems ($p > 0.05$), problems such as nausea/vomiting, constipation, epistaxis, palpitation, fever, and sleeplessness were experienced at a higher rate in the control group (Table 2). Among these problems, the one experienced most frequently was found to be sleeplessness. It is thought that the frequency of sleeplessness problems may be attributed to the intensity of pain and difficulty in lying in a supine position. It has also been stated that sleep disorders develop in the postoperative period due to surgical stress and/or management with narcotic drugs as well as hemodynamic disturbances in the early postoperative period, lack of appetite and hypoxemia.^[24] Aydın^[25] reported that sleeplessness problems were experienced by 72% of the patients undergoing valve replacement within one month of operation, and Ortaç^[26] reported that sleeplessness problems were related to position.

The problem occurring most frequently in the study and control groups was back and shoulder pain and the fourth most frequent problem was chest (incision) pain. However, the difference between groups was not found

to be significant ($p > 0.05$). It is thought that the experience of intensive chest pain in both groups was influential in this result. In another study, it was stated that the prevalence of chronic pain in the four-year period after operation was between 23% and 61%.^[27] Ortaç^[26] reported that the physical problem experienced most commonly by the patients was movement restriction due to pain. However, it is thought that the fact that patients in the study group used the recommended exercises for relieving the pain more frequently than the control group and used a lower amount of analgesics may be influential.

In addition, the problem of constipation occurred more frequently in the control group even if the difference was not statistically significant. It is thought that training given for the prevention of constipation may have played a part in this. Similarly, in the study of Cebeci^[10] it was established that among patients who underwent heart valve replacement operations, the patients in the group given training experienced constipation at a lower rate.

In conclusion, it was established that training for discharge was influential in helping patients to have high levels of information and self care practice by enabling them to carry out their self care, which caused them to encounter fewer problems after discharge. In addition, informing the patients about the content of the training through a written information booklet and focusing on the individual needs of the patients enhanced the efficacy of the programme.

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