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Research Paper – Araştırma Makalesi

DOES THE TRAINING PROVIDED BY THE NURSE AFFECT SYMPTOM CONTROL AND HEALTH BEHAVIOR IN PATIENTS WITH ACUTE CORONARY SYNDROME?

HEMŞİRE TARAFINDAN VERİLEN EĞİTİM AKUT KORONER SENDROMLU HASTALARDA SEMPTOM KONTROLÜ VE SAĞLIK DAVRANIŞLARINI ETKİLER Mİ?

Dilan DENIZ AKAN [1], Sezgi CINAR PAKYUZ[2]

Özet

Bu çalışma, hemşirelerin akut koroner sendromlu hastalara verdiği eğitimin semptom kontrolü ve sağlık davranışlarına etkisini değerlendirmek amacıyla yarı deneysel olarak tasarlanmıştır. Çalışma, Ocak-Ağustos 2017 tarihleri arasında 40 girişim ve 40 kontrol olmak üzere toplam 80 akut koroner sendromlu hasta ile yürütüldü. Veriler Hasta Bilgi Formu, Kardiyovasküler Kısıtlılık ve Semptomlar Profili (CLASP), Sağlıklı Yaşam Tarzı Davranışları Ölçeği-II (HLSBS-II) ölçeği aracılığıyla toplandı. Girişim grubundaki hastalara akut koroner sendrom, risk faktörleri, kalp sağlığını koruma ve sağlıklı yaşam davranışları konularında eğitim verildi. Kontrol grubundaki hastalara herhangi bir uygulama yapılmadı. Semptomlardaki değişiklikleri gözlemlemek için sekiz hafta beklendi ve daha sonra semptom ve yaşam tarzı davranışlarındaki değişiklikleri değerlendirmek için aynı ölçekler tekrar uygulandı. Girişim ve kontrol grubundaki hastaların CLASP ve HLSBS-II puanları girişim öncesi ve sonrası karşılaştırıldığında; girişim grubunun CLASP puanlarının anlamlı düzeyde düştüğü ($p < 0,05$) ve HLSBS-II puanlarının anlamlı düzeyde arttığı ($p < 0,05$) görüldü. Sonuç olarak, hemşire tarafından verilen eğitim akut koroner sendromlu hastalarda semptomları azalttı ve sağlık davranışlarını iyileştirdi. Bu nedenle akut koroner sendromlu hastalara kardiyoloji hemşireleri tarafından eğitim verilmesini öneriyoruz.

Anahtar Kelimeler: Akut koroner sendrom, sağlıklı yaşam biçimi davranışları, kısıtlılık ve semptomlar

Abstract

This study was designed as quasi-experimental to evaluate the effect of nurses' education on patients with acute coronary syndrome on symptom control and health behaviors. The study was conducted with a total of 80 patients with acute coronary syndrome which were 40 interventions and 40 controls, between January and August 2017. Data were collected through the Patient Information Form, Cardiovascular Limitation and Symptoms Profile (CLASP) and Healthy Lifestyle Behaviors Scale-II (HLSBS-II). Patients in the intervention group were given training on acute coronary syndrome, risk factors, protecting heart health and healthy lifestyle behaviors. No application was made to the patients in the control group. Eight weeks were waited to observe changes in symptoms, and then the same scales were applied again to assess changes in symptoms and lifestyle behaviors. When the CLASP and HLSBS-II scores of the patients in the intervention and control groups were compared before and after the intervention; It was observed that the CLASP scores of the intervention group decreased significantly ($p < 0.05$) and the HLSBS-II scores increased significantly ($p < 0.05$). In conclusion, nurse-delivered training reduced symptoms and improved health behaviors in patients with acute coronary syndrome. Therefore, we recommend that patients with acute coronary syndrome be trained by cardiology nurses.

Keywords: Acute coronary syndrome, healthy lifestyle behaviors, limitations and symptoms

Geliş Tarihi (Received Date): 13.02.2023, Kabul Tarihi (Accepted Date): 21.07.2023, Basım Tarihi (Published Date): 30.09.2023. [1] Manisa Celal Bayar University, Faculty of Health Sciences, Nursing Department, Manisa, Türkiye, [2] Manisa Celal Bayar University, Faculty of Health Sciences, Nursing Department, Manisa, Türkiye (Retired). **E-mail:** deniz.dilan91@gmail.com **ORCID ID's:** D.D.A.; https:/orcid.org/0000-0002-8258-8658, S.C.P.; https:/orcid.org/0000-0002-6538-8801.

1. INTRODUCTION

Cardiovascular diseases are one of the leading causes of death both in the world and in our country (Rajan et al., 2020, pp.E2.; Akman and Civek, 2022, pp.23) The World Health Organization (WHO) reported that 17.9 million people died worldwide due to cardiovascular diseases in 2019. This rate constitutes 32% of all deaths (WHO, 2021). It is stated that with the aging of societies and the increase in life expectancy, the number of cardiovascular patients in developed countries and the burden associated with them increase. Therefore, it is predicted that deaths due to cardiovascular diseases will continue to be one of the more important causes of death for a long time (Visseren et al, 2021, pp.3242). The most common cardiovascular disease in adults is coronary artery disease and is associated with high mortality and morbidity (Liblik et al., 2022 pp.2). Cardiovascular diseases are responsible for 45% of female deaths and 38% of male deaths under the age of 75 in Europe. 800.000 deaths from cardiovascular disease occur annually in the USA; about 370.000 of these are due to coronary artery disease (Kachur et al., 2017, pp.105). The Turkish Statistical Institute (TURKSTAT) reports that the deaths caused by the circulatory system in our country are in the first place with 36.8% (TURKSTAT, 2019).

Acute coronary syndrome (ACS) is a progressive, systemic and inflammatory disease characterized by acute myocardial ischemia, in which atherosclerosis plays a role in its main etiology. Clinical manifestations of ACS:

ST elevation myocardial infarction (STEMI), Non-ST elevation myocardial infarction (NSTEMI), and unstable angina pectoris (UAP) (Zaben and Khalil, 2019, pp.384).

Despite serious advances in the treatment of ACS, morbidity and mortality rates still remain high. Re-hospitalization rates due to acute coronary syndromes are high and this negatively affects health care costs (Anderson and Morrow, 2017, pp.2055; Zaben and Khalil, 2019, pp.384).

In 2016, the Heart Disease and Stroke Statistics update was published by the American Heart Association (AHA). In this update reported that there are 15.5 million people over the age of 20 with chronic heart disease in the USA. The same report also reported that the reported prevalence increases with age for both women and men, with nearly every 42 seconds an American experiencing an MI (Mozaffarian et al., 2016, pp.E168). The most comprehensive study investigating the epidemiological features of cardiovascular diseases in Turkey is the Heart Disease and Risk Factors Study in Turkish Adults (TEKHARF), conducted by the Turkish Society of Cardiology. According to the 2017 report of this study, approximately 420.000 cases of ACS occur annually in Turkey, and approximately 95.000 of these cases result in death. This rate is higher than the rates reported in Europe (Onat et al., 2017, pp.28).

Today, despite the continuous development of treatment methods and interventions related to cardiovascular diseases thanks to technology, the level of development against risk factors has still not reached the desired level (Visseren et al., 2021, pp.3242). ACS constitutes one of the most important health problems of today's society due to the hospitalizations it causes, loss of workforce, morbidity and mortality. The AHA reports that approximately 1.2 million people are discharged from the hospital with the diagnosis of ACS and the rates of hospital readmission are high (Roger et al., 2012, pp.E12; Zaben and Khalil, 2019, pp.385). Therefore, prevention of cardiovascular diseases has become a current, growing and urgent need for healthcare. In this direction, it is necessary to evaluate the limitation and symptom levels of individuals with ACS after discharge, and to examine their compliance with drug therapy, nutrition and individual follow-ups after discharge. Counseling and cardiac

rehabilitation programs carried out for this purpose are of great importance in terms of symptom management and quality of life (Özcanlı and Çınar, 2015, pp.72; Kachur et al., 2017, pp.105; Candelaria et al., 2020, pp.580). Symptom management can be achieved through effective secondary prevention; The quality of life of patients with ACS can be improved and thus rehospitalization can be prevented. For this purpose, comprehensive guidelines for the long-term management of patients with ACS are published by important authorities in the field of Cardiology (AHA, American College of Cardiology and European Society of Cardiology). Currently, there is a significant gap between these guidelines and their clinical application. Health education given by the nurse may contribute to better outcomes than preventive goals (Afik et al., 2022, pp.109).

Nurses have responsibilities to protect, develop and improve the quality of life. Patient education is one of the most important roles of nurses in terms of promoting and maintaining health and preventing diseases. The care services that nurses should provide to individuals with ACS include health education for patients to have information about their diseases, nutrition and treatment plan, and practices and behaviors that should be done after discharge. It is estimated that the nurse-based education intervention will reduce the disease-related limitations and symptoms of individuals with ACS, increase their quality of life, and improve their health behaviors positively (Özcanlı and Çınar, 2015, pp.72; Afik et al., 2022, pp.109). In the intervention study of Huber et al. (2017) reported that a nurse-led secondary prevention program was significantly effective on individuals with ACS (Huber et al., 2017, pp.10). In the 2012 report of the European Society of Cardiology, it was suggested that training programs under the coordination of nurses should be included in health systems.

The aim of the study is to evaluate the effect of training provided by the nurse on patients with ACS on symptom control and health behaviors.

2. METHODS

2.1. Design

The design of the study is quasi-experimental in a randomized paired experiment-control pre-test post-test design.

Hypothesis

The hypothesis of study; the training provided by the nurse to patients with ACS affects the symptom control and health behavior of patients.

2.2. Sample

The study was carried out with a total of 80 patients with ACS, 40 interventions and 40 controls, between January and August 2017. The study population consisted of patients diagnosed with ACS in Manisa Celal Bayar University (MCBU) Hafsa Sultan Hospital. Eighty patients diagnosed with ACS and meeting the study criteria were included in the study.

Patients aged between 18 and 65 years, who were diagnosed with ACS at least one month ago, had no communication problems, had no history of cancer, asthma, chronic obstructive pulmonary disease (COPD) and heart failure (HF), and volunteered to participate in the study were included in the sample.

The power of the study was calculated using the GPOWER 3.1 statistical software package. At a significance level of 0.05 and a medium effect size (0.5), the power of the study was 90%.

2.3. Intervention

Patients were evaluated for sample inclusion criteria. A total of 230 patients who did not meet the inclusion criteria and refused to participate in the study were excluded. The patients included in the study were informed about the study and their consent was obtained. Patients were grouped according to protocol numbers according to the random sampling method (intervention group with odd protocol number, control group with even protocol number) (Figure 1).

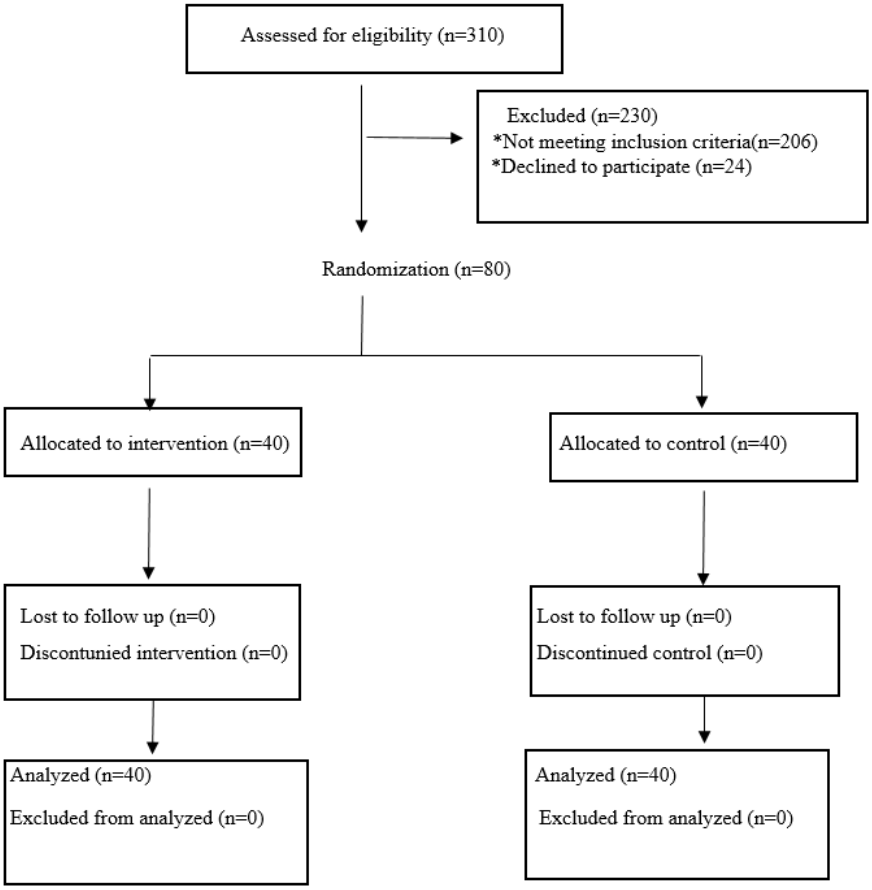

Figure 1. Consort flow diagram

2.4. Data collection method

In the study, data were collected using Patient Information Form, Cardiovascular Limitations and Symptom Profile (CLASP) and Healthy Lifestyle Behaviors Scale-II (HLSBS-II).

The Patient Information Form: This form was prepared by the researchers in line with the literature in order to collect information about the sociodemographic and disease-related characteristics of the participants (Inangil and Sendir, 2014, pp.98; Ozcanli and Cinar, 2015, pp.75). The form consists of 23 questions questioning personal characteristics (gender, age, height, weight, educational status, marital status, occupational status, employment status, social security, smoking-alcohol use) and disease-related characteristics (clinical diagnosis, how length of ACS diagnosis, existence of another disease, the regularity of control visits).

The Cardiovascular Limitations and Symptoms Profile (CLASP): The scale was developed by Lewin et al. (2002). The adaptation of the scale to Turkish society was carried out by Atik

and Çınar in 2012. CLASP is a 37-item scale consisting of five sub-dimensions. The scale designed in Likert type can evaluate both physical and functional dimensions. Each sub-dimension in the scale is evaluated separately and each dimension consists of 4-6 items. Items are evaluated as "normal", "mild", "moderate", "advanced" according to the level of dysfunction. An increase in scale scores indicates a decrease in quality of life. The reliability coefficient of the scale is 0.92 (Ozcanli and Cinar, 2015, pp.75). The Cronbach's alpha value in our study was found to be 0.89.

The Healthy Life Style Behaviors Scale-II (HLSBS-II): The scale was developed by Walker et al. (1987). The scale was updated in 1996. Turkish validity and reliability of the scale (HLSBS-II) was determined by Bahar et al. in 2008. The scale, which measures an individual's health promoting behaviors related to a healthy lifestyle, consists of 6 sub-dimensions and 52 items. The Cronbach's alpha reliability coefficient of the 4-point Likert-type scale is 0.92. The alpha reliability value of the sub-dimensions of the scale varies between 0.79 and 0.87 (Bahar et al., 2008, pp.5). The Cronbach's alpha value in our study was found to be 0.90.

2.5. Intervention protocol

Before the training, questionnaire data were collected from the intervention group. Afterwards, 30-45 minutes of nursing education was given including anatomy and physiology of the heart, risk factors, heart health, symptom management in cardiovascular diseases and healthy lifestyle behaviors. Colorful educational booklets containing the information in the education were given to the patients. In the study, an eight-week interval was given between the first and second interviews to observe could symptom changes likely to occur in patients in the intervention group. Eight weeks after the training, all patients were contacted again and patient information form, the CLASP and HLSBS-II scales were refilled. No intervention was applied to the control group patients. Only patient information form and CLASP and HLSBS-II scales were applied to this group of patients. Eight weeks later, the same scales were repeated for each patient. Considering the right of the patients in the control group to obtain information, the training program given to the intervention group at the end of the second interview was also given to the patients in the control group. Colorful educational booklets were distributed. The application flowchart is shown in Figure 2.

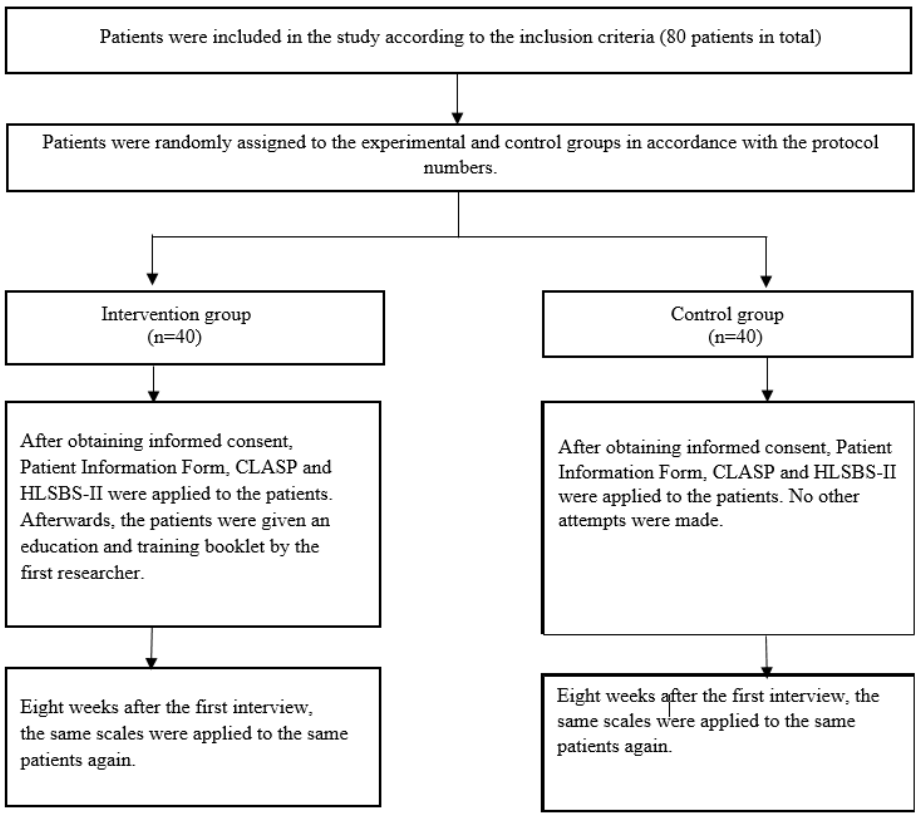

Figure 2. Application flow chart

2.6. Data analysis

Statistical analysis of the data was done using the SPSS 15.0 software package in computer environment. Data were presented as mean, standard deviation values, and percentages. Data were considered significant at 95% confidence interval and $p < 0.05$. In the analysis of the data, t-test, Fisher exact Chi-square test and McNemar test were used in dependent and independent groups.

2.7. Ethical considerations

In order to carry out the study, necessary permissions were obtained from the Manisa Celal Bayar University Medical Faculty Health Sciences Ethics Committee (Decision date, 04 January 2017; Decision no: 22.478.486) and the hospital. The patients included in the study were informed about the study and an informed consent form was signed. When the study was completed, the training given to the patients in the intervention group was also given to the patients in the control group, taking into account the patient's rights according to the principles of the Declaration of Helsinki.

3. RESULTS

The mean age of the patients was 58.1 ± 10.7 years for the intervention group and 58.7 ± 10.0 years for the control group. There was no significant difference between the intervention group and the control group in terms of socio-demographic characteristics such as age, gender,

marital status, educational status, employment status, occupation, health insurance, and income status (p >0.05), (Table 1). The groups were homogeneously distributed. The sociodemographic and disease-related characteristics of the patients are shown in Table 1.

Table 1. Sociodemographic and Disease-Related Characteristics of Intervention and Control Group Patients (n=80)

		Intervention Group (n=40)		Control Group (n=40)		Significance	
		n	**%**	**n**	**%**		
Gender	Female	20	50	18	45		
	Male	20	50	22	55	X^2=0.201	p=0.654
Marital status	Married	31	77.5	34	85		
	Single	9	22.5	6	15	X^2=0.738	p=0.390
Education status	Not literate	1	2.5	2	5		
	Literate	6	15	6	15		
	Primary school	14	35	9	22.5		
	High school	14	35	18	45	X^2=1.920	p=0.750
	University	5	12.5	5	12.5		
Working status	Working	12	30	14	35		
	Not working	28	70	26	65	X^2=0.228	p=0.633
Profession	Retired	16	40	16	40		
	Officer	6	15	10	25		
	Worker	2	5	2	5		
	Self-employment	4	10	2	5	X^2=1.848	p=0.764
	Housewife	12	30	10	25		
Health Insurance	Yes	38	95	36	90		
	No	2	5	4	10	X^2=2.051[a]	p=0.494
Income status	Revenue is less than expenses	16	40	20	50		
	Income and expense	20	50	15	37.5	X^2=1.270	p=0.530
	Income more than expense	4	10	5	12.5		
		Mean±Sd.		**Mean±Sd.**			
Age (Years)		58.1±10.7		58.7±10.0		t=-0.258	p=0.797
Disease-Related Features		**n**	**%**	**n**	**%**	**Significance**	
Smoking	Yes	31	77.5	34	85		
	No	9	22.5	6	15	X^2=0.738	p=0.390
Alcohol Use	Yes	12	30	14	35		
	No	28	70	26	65	X^2=0.228	p=0.633
Duration of Diagnosis	6 months-1 year	13	32.5	10	25		
	1-2 years	12	30	11	27.5	X^2=0.905	p=0.636
	2 years and over	15	37.5	19	47.5		
Hospitalization Status	Yes	9	22.5	17	42.5		
	No	31	77.5	23	57.5	X^2=3.647	p=0.056
The Doctor's Check	Yes	5	12.5	11	27.5		
	No	35	87.5	29	72.5	X^2=2.813	p=0.094
		Mean±Sd.		**Mean±Sd.**			

Length	168.30±8.18	169.57±7.09	t=1.054	p=0.295
Weight	85.72±14.10	83.97±13.75	t=0.418	p=0.677
Body mass index (BMI)	30.14±3.54	29.06±3.49	t=1.742	p=0.085

Note: T test was used in chi-square and independent groups. *p<0.05

A statistically significant difference was found between the intervention and control groups in terms of the presence of other diseases (p <0.05), (Table 1). The majority of the patients in the intervention and control groups had another disease (intervention 67.5%, control 90%). Of the patients with ACS, 77.5% had hypertension and 57.6% had diabetes. Also, patients with ACS in the intervention group included in our study had hypertension (80.4%), diabetes mellitus (47.1%), respiratory system diseases (3.7%), and rheumatic diseases (11.1%), whereas patients in the control group were found to have hypertension (83.4%), diabetes mellitus (41.7%), respiratory system diseases (8.4%), and rheumatic disease (8.4%).

A statistically significant difference was found between pre-test and post-test of the patients in the intervention group in terms of smoking, alcohol use, and going to doctor controls (p <0.05), (Table 2). Also, there was a statistically significant difference between the pre-test and post-test mean weight and BMI scores of patients in the intervention group (p <0.05), (Table 2). Findings regarding the habits of the patients in the intervention group in pre-test and post-test are shown in Table 2.

Table 2. Findings Regarding the Pre-test and Post-test Habits of the Intervention Group Patients (n=40)

		Intervention Group (n=40)		**Control Group (n=40)**		**Significance**	
		n	**%**	**n**	**%**		
Smoking	Yes	31	77.5	12	30		
	No	9	22.5	28	70	X^2=4.977[a]	**p=0.000*** **
Alcohol Use	Yes	12	30	14	35		
	No	28	70	26	65	X^2=10.370[a]	**p=0.008****
The Doctor's Check	Yes	5	12.5	11	27.5		
	No	35	87.5	29	72.5	X^2=0.112[a]	**p=0.000*** **
		Mean±Sd.		**Mean±Sd.**			
Weight		85.72±14.10		81.82±14.10		t=8.215[b]	**p=0.000*** **
Body mass index (BMI)		30.14±3.54		28.76±3.18		t=8.466[b]	**p=0.000*** **

Note: [a]McNemar and [b]t test was used. **p<0.01 ***p<0.001.

When scores obtained from the sub-dimension of the CLASP are considered, the intra-group post-test scores of patients in the intervention group were determined to be lower than their pre-test scores in terms of angina, shortness of breath, ankle swelling, tiredness, mobility, social life activities, concerns and worries subscales, and the difference was found to be

statistically significant (t=19.383, p <0.05; t=18.067, p <0.05; t=4.085, p <0.05; t=13.029, p <0.05; t=10.564, p <0.05; t=13.029, p <0.05 t=12.916, p <0.05). The intra-group and inter-group differences in terms of subscale scores of the CLASP in pre-test and post-test are shown in Table 3. While there was no significant difference between the inter-group scores of the patients in the intervention group regarding the sub-dimensions of the CLASP in pre-test (t=0.720, p >0.05; t=0.753, p >0.05; t=1.063, p >0.05; t=1.043, p >0.05; t=0.706, p >0.05; t=-1.143, p >0.05; t=-0.446, p >0.05; t=1.643, p >0.05; t=-0.607, p >0.05), a statistically significant difference was found between post-test scores in terms of angina, shortness of breath, ankle swelling, tiredness, mobility, social life activities, concerns and worries subscales (t=-14.074, p <0.05; t=-12.270, p <0.05; t=-3.466, p <0.05; t=-9.563, p <0.05; t=-8.579, p <0.05**;** t=-7.770, p <0.05; t=-9.696, p <0.05), (Table 3). The intra-group and inter-group differences in terms of the sub-scales of the CLASP were shown in Table 3.

Table 3. Intra-group and In-group Differences in Terms of Subdimension Scores of CLASP Scale Between in Pre-test and Post-test (n=80)

Subdimensions		**Pre-test (n=80)**	**Post-test (n=80)**	**Significance**	
Angina	Intervention Group (n=40)	12.48±2.10	6.82±1.51	t=19.383	**p=0.000*****
	Control Group (n=40)	11.95±2.45	13.55±2.58	t=-5.167	**p=0.000*****
	Significance	t=0.720	t=-14.074		
		p=0.485	**p=0.000*****		
Shortness of breath	Intervention Group (n=40)	14.06±2.26	7.81±1.28	t=18.067	**p=0.000*****
	Control Group (n=40)	13.13±2.93	13.75±2.53	t=-3.186	**p=0.003****
	Significance	t=0.753	t=-12.270		
		p=0.454	**p=0.000*****		
Ankle swelling	Intervention Group (n=40)	6.71±1.88	3.57±0.53	t=4.085	**p=0.006****
	Control Group (n=40)	5.95±1.94	7.39±1.75	t=-4.675	**p=0.000*****
	Significance	t=1.063	t=-3.466		
		p=0.293	**p=0.001****		
Tiredness	Intervention Group (n=40)	7.90±2.07	3.70±1.05	t=13.029	**p=0.000*****
	Control Group (n=40)	7.29±1.99	7.64±2.07	t=-2.494	**p=0.017***
	Significance	t=1.043	t=-9.563		
		p=0.301	**p=0.000*****		
Mobility	Intervention Group (n=40)	11.85±3.49	8.45±1.93	t=10.564	**p=0.000*****
	Control Group (n=40)	11.30±3.46	13.52±3.20	t=-8.660	**p=0.000*****
	Significance	t=0.706	t=-8.579		
		p=0.482	**p=0.000*****		
Social life activities	Intervention Group (n=40)	8.02±2.08	5.27±1.86	t=13.029	**p=0.000*****
	Control Group (n=40)	8.60±2.40	8.90±2.28	t=-3.122	**p=0.003****
	Significance	t=-1.143	t=-7.770		
		p=0.256	**p=0.000*****		
Activities within the home	Intervention Group (n=40)	17.32±2.05	16.80±2.82	t=1.833	p=0.074
	Control Group (n=40)	17.57±2.89	17.75±2.50	t=-1.554	p=0.128
	Significance	t=-0.446	t=-1.591		
		p=0.657	p=0.116		
Concerns and worries	Intervention Group (n=40)	7.52±2.13	3.77±1.12	t=12.916	**p=0.000*****
	Control Group (n=40)	6.72±2.21	7.35±2.04	t=-3.586	**p=0.001****
	Significance	t=1.643	t=-9.696		
		p=0.104	**p=0.000*****		
Gender	Intervention Group (n=40)	10.35±3.95	10.42±4.89	t=-0.250	p=0.804
	Control Group (n=40)	10.90±4.13	11.32±3.78	t=-2.379	p=0.022

	Significance	t=-0.607	t=-0.919
		p=0.545	p=0.361

Note: T test was used in independent groups and t test in dependent groups.*p<0.05 **p<0.01 ***p<0.001

When total scores obtained from the HLSBS-II were compared, an increase was observed in the mean scores of the patients in the intervention group and this increase was statistically significant (t=-26.094; p <0.05), (Table 4). On the other hand, when the scores obtained from the sub-dimensions of the HLSBS-II were taken into consideration, the patients in the intervention group were determined to get higher scores in post-test from sub-dimensions such as health responsibility, physical activity, nutrition, spiritual development, interpersonal relations, and stress management, and the difference was statistically significant (t=-20.821, p <0.05; t=-33.597, p <0.05; t=-16.794, p <0.05; t=-18.797, p <0.05; t=-11.726, p <0.05; t=26.465, p <0.05). When the inter-group HLSBS-II sub-dimension scores of the patients in the intervention group were compared, a statistically significant difference was observed in the sub-dimensions such as health responsibility, nutrition, spiritual development, and stress management in pre-test (t=-2.178, p <0.05; t=2.462, p <0.05; t=-2.181, p <0.05; t=-2.414, p <0.05). In post-test, on the other hand, a statistically significant difference was found between post-test scores regarding health responsibility, physical activity, nutrition, spiritual development, interpersonal relations, and stress management sub-dimensions (t=20.771, p <0.05; t=29.176, p <0.05; t=20.115, p <0.05; t=13.714, p <0.05; t=10.390, p <0.05; t=25.715, p <0.05), (Table 4). The intra-group and inter-group differences in terms of HLSBS-II sub-dimensions in pre-test and post-test are shown in Table 4.

Table 4. Intra-group and In-group Differences in Terms of Subdimension Scores of HLSBS-II Between in Pre-test and Post-test (n=80)

Subdimensions		**Post-test (n=80) Mean±Sd.**	**Post-test (n=80) Mean±Sd.**	**Significance**	
Health Responsibility	Intervention Group (n=40)	15.77±3.16	27.67±2.48	t=-20.821	**p=0.000*** **
	Control Group (n=40)	17.07±2.05	17.10±2.04	t=-0.572	p=0.570
	Significance	t=-2.178 **p=0.032**	t=20.771 **p=0.000***		
Physical Activity	Intervention Group (n=40)	11.67±2.80	27.12±2.20	t=-33.597	**p=0.000*** **
	Control Group (n=40)	12.40±2.32	12.35±2.25	t=1.433	p=0.160
	Significance	t=-0.137 p=0.891	t=29.176 **p=0.000***		
Nutrition	Intervention Group (n=40)	20.77±2.59	29.30±2.01	t=-16.794	**p=0.000*** **
	Control Group (n=40)	19.40±2.39	19.37±2.38	t=0.572	p=0.570
	Significance	t=2.462 **p=0.016***	t=20.115 **p=0.000***		
Spiritual Development	Intervention Group (n=40)	21.10±2.95	31.67±2.95	t=-18.797	**p=0.000*** **
	Control Group (n=40)	22.55±2.99	22.60±3.00	t=0.572	p=0.570
	Significance	t=-2.181 **p=0.032***	t=13.714 **p=0.000***		

Interpersonal Relations	Intervention Group (n=40)	22.85±3.65	29.90±2.37	t=-11.726	**p=0.000*** **
	Control Group (n=40)	23.20±3.27	23.50±3.40	t=-1.186	p=0.244
	Significance	t=-0.451	t=10.390		
		p=0.653	**p=0.000***		
Stress Management	Intervention Group (n=40)	15.37±2.84	28.35±1.44	t=26.465	**p=0.000*** **
	Control Group (n=40)	16.80±2.42	17.50±5.37	t=-0.964	p=0.341
	Significance	t=-2.414	t=25.715		
		p=0.018*	**p=0.000***		
Total Points	Intervention Group (n=40)	107.55±15.16	174.02±10.29	t=-26.094	**p=0.000*** **
	Control Group (n=40)	110.75±12.05	110.89±12.11	t=0.274	p=0.786
	Significance	t=-1.045	t=25.239		
		p=0.299	**p=0.000***		

Note: T test was used in independent groups and t test was used in dependent groups. *p<0.05 ** p<0.01 ***p<0.001

4. DISCUSSION

In this study, which was carried out to evaluate the effect of training provided by the nurse to patients with ACS on symptom control and health behaviors, no significant difference was found between the intervention and control groups in terms of sociodemographic characteristics such as age, gender, marital status, educational status, employment status, profession, health insurance, and income status (Table 1). As an independent variable, two groups must have similar demographic characteristics to demonstrate the success of randomization methods.

The main finding of our study was that the training given by the nurse to individuals with ACS, in addition to the usual care, was highly effective in achieving symptom control and gaining healthy lifestyle behaviors. Other studies in the literature were found to support the results of our study (Jorstad et al., 2013, p.1421; Mohammadpour et al., 2015, pp.1689; Jeihooni et al., 2018, pp.9; Koh et al., 2016, pp.1365). The training given by the nurse was observed to facilitate symptom control of individuals with ACS and helped them gain healthy lifestyle behaviors.

Quitting smoking in patients with ACS is one of the most important elements of secondary prevention (Go et al., 2013, pp.27). In the post-training evaluation, a significant number of patients in the intervention group were observed to quit smoking. The results of our study were found to be similar to the literature (Xavier et al., 2016, pp.250). There was a significant decrease in weight and body mass index between pre-test and post-test of the patients in the intervention group (Table 2). This finding was important in terms of evaluating the effectiveness of the training given to the patients. We thought that the gains in weight control developed due to the changes in nutritional management and the increase in physical activity. Health training is accepted as an effective tool in primary and secondary prevention since it is a feasible and inexpensive method especially in developing countries (Eshah, 2013, pp.275; Huber et al., 2017, pp.8). In our study, the achievement of weight control in post test of patients in the intervention group, a decrease in the symptoms of the disease, and positive changes in

healthy lifestyle behaviors were remarkable findings. These findings support the effectiveness of health training in promoting a healthy lifestyle, reducing risk factors, and thus preventing the recurrence of ACS in the future.

In post-test, a statistically significant difference was found between the scores of patients obtained from sub-dimensions such as angina, shortness of breath, ankle swelling, tiredness, mobility, social life activities, concerns and worries. We thought that these changes were because the patients were able to achieve active participation in their health management with the help of face-to-face and comprehensive health training provided by the nurse.

Of the sub-dimensions of the CLASP scale, only the change in the domestic activities and sexuality sub-dimensions was not statistically significant concerning the patients in the intervention group. We thought that this may have stemmed from the fact that men do not take many roles in domestic activities in our country and that the individuals in our country still cannot talk about sexuality-related health issues comfortably with healthcare professionals. Considering the results of our study, patients in the intervention group experienced a positive change in health responsibility, physical activity, and nutrition sub-dimensions at the end of the training, their stress management scores increased, and their scores for interpersonal relations indicated a positive change. We thought that this change was the result of a positive reflection of the educational content regarding how to cope with stress.

The results showed that the training given in our study was effective in developing healthy lifestyle behaviors and was reflected positively on healthy lifestyle behaviors. The different studies conducted also support our study findings (O'Brien et al., 2014, pp.84; Fertelli-Kars and Tel, 2007, pp.59). As a result of the health training the patients received, we thought that knowing their diseases and learning strategies for managing the disease reduced the difficulties of living with a chronic illness, which is a stressful situation, and this had a positive effect on the stress management sub-dimension score. The increase in the interpersonal relations score might have been the result of sharing the information with the family of the patient, which helped them to act together in the management of ACS. As a result of the training provided by the nurse, physical activity was increased in patients. To improve health, it is necessary to increase the sensitivity to health and to provide sustainability of the training to gain positive health behaviors. For this purpose, it is recommended that specialist nurses who will provide health training and follow-up to patients with ACS, especially in polyclinics should be employed.

Our study has several strengths. First, the intervention was carried out by a single trained person, which ensured that the intervention was given equally to all participants in the intervention group. This may have provided the effectiveness of our study. We think that our study is important in that it is practical, feasible, and can be integrated into routine clinical care.

5. CONCLUSION

Our study findings showed that with the training given by nurses to patients with ACS, patients' BMI values, limitation and symptom scores decreased, and healthy lifestyle behaviors scores increased. It was concluded that the training given by the nurse could be used as an effective method in the management of ACS and the development of positive health behaviors. In line with these findings, to reduce the limitations and symptoms of patients with ACS and to develop healthy lifestyle behaviors, we recommend that the health training including the causes of ACS, risk factors, the importance of drug therapy, effects and side effects, losing bodyweight, regular physical exercise, proper diet, and the importance of doctor visits for

control should be given to all patients with ACS, the training should be repeated in larger groups to evaluate the effectiveness of the study, and that the sustainability of the training and consultancy services provided by cadiology nurses to patients with ACS should be provided.

Limitations of the Study

Although the results are encouraging, there are points that need to be improved. The training was given to our study by a single researcher. Follow-up took eight weeks. We think that with more than one trainer, clearer results will be obtained with longer follow-ups. The findings obtained from our study are limited due to sample size and appropriate sampling. We recommend repeating in large groups.

Conflict of Interest: There is no conflict of interest between the authors.

6. REFERENCES

Afik, A., Nursalam, N., Sufyanti, A. Y., Fikriana, R. (2022). Effect of Nurse-Led Program in Coronary Heart Diseases Patients: A Systematic Review. Open Access Macedonian Journal of Medical Sciences, 9(T5), 109–114. https://doi.org/10.3889/oamjms.2021.7861

Akman, M., Civek, S. (2022). Dünyada ve Türkiye'de kardiyovasküler hastalıkların sıklığı ve riskin değerlendirilmesi. The Journal of Turkish Family Physician, 13(1), 21-28. https://doi.org/10.15511/tjtfp.22.00121

Bahar, Z., Beser, A., Gördes, N., Kıssal, A. (2008). Validity and reliability study of healthy lifestyle behavior scale II. Cumhuriyet University Hemsirelik School Journal, 12(1), 1-13.

Candelaria, D., Randall, S., Ladak, L., Gallagher, R. (2020). Health-related quality of life and exercise-based cardiac rehabilitation in contemporary acute coronary syndrome patients: a systematic review and meta-analysis. Quality Of Life Research : An İnternational Journal Of Quality Of Life Aspects Of Treatment, Care And Rehabilitation, 29(3), 579–592. https://doi.org/10.1007/s11136-019-02338-y

Eshah, N. F. (2013). Predischarge education improves adherence to a healthy lifestyle among Jordanian patients with acutecoronary syndrome. Nursing and Health Sciences, 15(3), 273–79. https://doi.org/10.1111/nhs.12018

Fertelli-Kars, T., Tel, H. (2007). The effect of planned education given to individuals after myocardial infarction on self-care agency. Journal of Intensive Care Nursing, 11(2), 57-61.

Go, A. S., Mozaffarian, D., Roger, V. L., Benjamin, E. J., Berry, J. D., Borden, W. B., Bravata, D. M., Dai, S., Ford, E. S., Fox, C. S., Franco, S., Fullerton, H. J., Gillespie, C., Hailpern, S. M., Heit, J. A., Howard, V. J., Huffman, M. D., Kissela, B. M., Kittner, S. J., Lackland, D. T., Turner M. B. (2013). American Heart Association Statistics Committee and Stroke Statistics Subcommittee (2013). Heart disease and stroke statistics--2013 update: a report from the American Heart Association. Circulation, 127(1), 6–245. https://doi.org/10.1161/CIR.0b013e31828124ad

Inangil, D., Sendir, M. (2014). Nurse's role in developing health behaviors of coronary artery patients. Acıbadem University Journal of Health Sciences, 5(2), 96-101.

Jeihooni, A. K., Fereidouni, Z., Harsini, P. A., Kavi, E., Haghshenas, H., Akbari, L. (2018). Effect of Educational Program on Lifestyle of Myocardial Infarction Patients in Iranian Population. Journal of Clinical & Diagnostic Research, 12(9), LC06-10. https://doi.org/10.7860/JCDR/2018/36113.11990

Jorstad, H. T., Von Birgelen, C., Alings, A. M., Liem, A., van Dantzig, J. M., Jaarsma, W., Lok, D. J., Kragten, H. J., de Vries, K., de Milliano, P. A., Withagen, A. J., Scholte Op Reimer, W. J., Tijssen, J. G., Peters, R. J. (2013). Effect of a nurse-coordinated prevention programme on cardiovascular risk after an acute coronary syndrome: main results of the RESPONSE randomised trial. Heart, 99(19), 1421-30. https://doi.org/10.1136/heartjnl-2013-303989

Kachur, S., Chongthammakun, V., Lavie, C. J., De Schutter, A., Arena, R., Milani, R. V., Franklin, B. A. (2017). Impact of cardiac rehabilitation and exercise training programs in coronary heart disease. Progress in cardiovascular diseases, 60(1), 103-114. https://doi.org/10.1016/j.pcad.2017.07.002

Koh, K. W., Wang, W., Richards, A. M., Chan, M. Y., Cheng, K. K. (2016). Effectiveness of advanced practice nurse-led telehealth on readmissions and health-related outcomes among patients with post-acute myocardial infarction: ALTRA Study Protocol. Journal of advanced nursing, 72(6), 1357–1367. https://doi.org/10.1111/jan.12933

Liblik, K., Théberge, E., Gomes, Z., Burbidge, E., Menon, N., Gobran, J., Johri, A. M. (2022). Improving Wellbeing After Acute Coronary Syndrome. Current Problems in Cardiology, 48, 101201. https://doi.org/10.1016/j.cpcardiol.2022.101201

Mohammadpour, A., Rahmati Sharghi, N., Khosravan, S., Alami, A., Akhond, M. (2015). The effect of a supportive educational intervention developed based on the Orem's self-care theory on the self-care ability of patients with myocardial infarction: a randomised controlled trial. Journal of clinical nursing, 24(11-12), 1686–1692. https://doi.org/10.1111/jocn.12775

Mozaffarian, D., Benjamin, E. J., Go, A. S., Arnett, D. K., Blaha, M. J., Cushman, M., Das, S. R., de Ferranti, S., Després, J. P., Fullerton, H. J., Howard, V. J., Huffman, M. D., Isasi, C. R., Jiménez, M. C., Judd, S. E., Kissela, B. M., Lichtman, J. H., Lisabeth, L. D., Liu, S., Turner M. B. Stroke Statistics Subcommittee (2016). Heart Disease and Stroke Statistics-2016 Update: A Report From the American Heart Association. Circulation, 133(4), e38–e360. https://doi.org/10.1161/CIR.0000000000000350

O'Brien, F., McKee, G., Mooney, M., O'Donnell, S., Moser, D. (2014). Improving knowledge, attitudes and beliefs about acute coronary syndrome through an individualized educational intervention: A randomized controlled trial. Patient Education and Counseling, 96(2), 79–187. https://doi.org/10.1016/j.pec.2014.05.022

Ozcanli, D., Cinar, S.A. (2015). Psychometric evalution of the turkish version of the cardiovascular limitations and symptoms profile. Journal of Contemporary Medicine, 5(2), 71-82. https://doi.org/10.16899/ctd.30638

Rajan, S., McKee, M., Rangarajan, S., Bangdiwala, S., Rosengren, A., Gupta, R., et. al. (2020). Association of symptoms of depression with cardiovascular disease and mortality in low-, middle-, and high-income countries. JAMA psychiatry, 77(10), 1052-1063. https://doi.org/10.1001/jamapsychiatry.2020.1351

Roger, V.L., Go, A.S., Lloyd-Jones, D.M., Benjamin, E.J., Berry, J.D., Borden, W.B., Bravata, D.M., Dai, S., Ford, E.S., Fox, C.S., Fullerton, H.J., Gillespie, C., Hailpern, S.M., Heit, J.A., Howard, V.J., Kissela, B.M., Kittner, SJ., Lackland, D.T., Lichtman, J.H., Lisabeth, L.D., Turner, M. B. American Heart Association Statistics Committee and Stroke Statistics Subcommittee (2012). Heart disease and stroke statistics--2012 update: a report from the American Heart Association. Circulation, 125(1), e2–e220. https://doi.org/10.1161/CIR.0b013e31823ac046

Turkish Statistical Institute. Death and Cause of Death Statistics 2021. [Cited: 2023 Jun 20] Avaliable from: https://data.tuik.gov.tr/Bulten/Index?p=%C3%96l%C3%BCm-ve-%C3%96l%C3%BCm-Nedeni-%C4%B0statistikleri-2021-45715&dil=1

Visseren, F. L. J., Mach, F., Smulders, Y. M., Carballo, D., Koskinas, K. C., Bäck, M., Benetos, A., Biffi, A., Boavida, J. M., Capodanno, D., Cosyns, B., Crawford, C., Davos, C. H., Desormais, I., Di Angelantonio, E., Franco, O. H., Halvorsen, S., Hobbs, F. D. R., Hollander, M., Jankowska, E. A., … William, B. ESC Scientific Document Group (2021). 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. European heart journal, 42(34), 3227–3337. https://doi.org/10.1093/eurheartj/ehab484

World Health Organization. 2021 [Cited: 2023 Jun 20] Avaliable from: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)/

Xavier, D., Gupta, R., Kamath, D., Sigamani, A., Devereaux, P.J., George, N., Joshi, R., Pogue, J., Pais, P., Yusuf, S. (2016). Community health worker-based intervention for adherence to drugs and lifestyle change after acute coronary syndrome: a multicentre, open, randomised controlled trial. The lancet. Diabetes & endocrinology, 4(3), 244–253. https://doi.org/10.1016/S2213-8587(15)00480-5

Zaben, K., Khalil, A. (2019). Health literacy, self-care behavior and quality of life in acute coronary syndrome patients: An integrative review. Open Journal of Nursing, 9(4), 383-395. https://doi.org/10.4236/ojn.2019.94035