

## Original Article

## The Effect of Self-Care Management on Compliance with Chronic Disease

**Sadik Hancerlioglu, PhD**

Research Assistant, Ege University Faculty of Nursing, Ismir, Turkey

**Cicek Fadiloglu, PhD**

Professor, Ege University Faculty of Nursing (Retired), Ismir, Turkey

**Yasemin Yildirim, PhD**

Professor, Ege University Faculty of Nursing, Ismir, Turkey

**Fisun Senuzun Aykar, PhD**

Professor, Ege University Faculty of Nursing, Ismir, Turkey

**Correspondence:** Sadik Hancerlioglu, PhD, Research Assistant, Ege University Faculty of Nursing, Ismir, Turkey email: s\_hancerlioglu@hotmail.com

### Abstract

**Aim:** The aim of this study was to determine the effect of self-care management on compliance with chronic disease on the patients included in the research.

**Method:** Study sample consisted of patients ( n=222 ) being treated in Internal Medicine, Pulmonary Diseases, and Cardiology clinics of Ege University Medical Faculty Hospital and who were diagnosed with Chronic Obstructive Pulmonary Disease (COPD), Chronic Heart Failure (CHF), or Diabetes (DM) at least six months prior to the treatment. For data collection, Chronic Disease Assessment Form, SCMP-G scale and Compliance questionnaire were applied to the patients by face-to-face interview technique.

**Results:** A statistically significant correlation was found between the mean self-care management score and mean compliance score of the patients in the study (B = 136.20, P < 0.001). According to the results of the regression analysis which was performed based on chronic diseases within the scope of the study to further examine the findings, a statistically significant correlation was found between Diabetes (B = 125.51, SD = 10.97, t = 11.43, P < 0.001), CHF (B = 113.18, SD = 15.85, t = 7.13, P < 0.001) and COPD (B = 182.18, SD = 16.05, t = 11.35, P < 0.001) disease groups.

**Conclusion:** As a result, as the self-care management of the patients within the scope of this study increased, the compliance of patients with chronic disease also increased; and as self-care management of patients in the disease groups increased, compliance also increased.

**Keywords:** Chronic Disease, Self-Care, Compliance

### Introduction

Incidence of chronic diseases (CD) has been increasing in all countries as a result of demographic and epidemiological transformation. It has been found that CDs, which are a global health problem, are responsible for 71% of 57 million deaths in 2016. In developing countries, this ratio is 78%. CDs also lead to early mortality. In developing countries, 75% of deaths related to CDs are reported to be in the 30-69 age range. It has been reported that 44% of deaths related to CDs are caused by cardiovascular diseases, 9% by

chronic respiratory diseases, and 4% by diabetes (WHO (2018)). Combating chronic diseases requires a joint approach and coordination in primary, secondary and tertiary care in terms of preventive, curative and rehabilitative services (WHO (2018)). The main component of CD treatment approach is reported as provision of treatment and care management. Success in CD treatment and care management can be achieved when individuals have adequate self-management and self-care. Patients who have CDs and have previously been treated in the hospital are often hospitalized for reasons such as

non-compliance with treatment and non-compliance with lifestyle changes (Ozdemir & Tasci, 2013, Durna & Oguz, 2018, Begum et al., 2011, Ha Dinh et al., 2016, Hamine et al., 2015) Studies have shown that compliance with treatment is as low as 16% in chronic diseases (Miller, 2016)). In order to solve existing or possible problems in patients with CDs, it is vital to increase the self-care of patients with respect to compliance with their disease and life. Accordingly, it is necessary to know the effect of self-care management in chronic diseases on compliance with the disease (Dwarswaard et al., 2016, Ausili et al., 2014, Chen & Chi 2015). Therefore, the aim of this study is to determine the effect of Self-Care Management on Compliance with chronic disease in the patients within the scope of this study.

### Methodology

Study sample consisted of patients aged 18 or older, who were being treated in Internal Medicine, Pulmonary Diseases, and Cardiology clinics of Ege University Medical Faculty Hospital, who were diagnosed with Chronic Obstructive Pulmonary Disease (COPD), Chronic Heart Failure (CHF), or Diabetes (DM) at least six months prior to treatment, who were able to communicate verbally, and who volunteered to participate in this study. The patients included in the study were informed about the research and their written consent were obtained. To collect data, Chronic Disease Assessment Form, SCMP-G scale and Compliance questionnaire were administered to the patients by face-to-face interview technique. ANOVA analysis was performed to determine whether there were any differences in Self-Care Management and Compliance levels according to chronic disease diagnoses (DM, CHF, COPD), and Regression Analysis was performed to investigate the correlation between Self-Care Management and Compliance.

### Ethical Approval

Ethical approval was obtained from Ege University School of Nursing Scientific Ethics Committee (decision no: 2013-45).

### Instruments

In this study, Chronic Disease Evaluation Form, Self-Care Management Scale in Chronic Diseases and Compliance Questionnaire were used as data collection forms.

Chronic Disease Evaluation Form was prepared by the researcher according to the literature (Incirkus & Nahcivan, 2011). Chronic disease evaluation form consisted of questions such as gender, age, educational status, marital status, employment status, social security, and diagnosis.

Self-Management Management Scale for Chronic Diseases (SCMP-G) was developed by Jones and Preuett. The SCMP-G scale has two sub-dimensions defined as self-protection and social protection. Self-protection sub-dimension consists of items 2, 6, 8, 11, 15, 18, 19, 20, 22, 23 and 25-34, whereas social protection sub-dimension consists of items 1, 3-5, 7, 9, 10, 12-14, 16 17, 21, 24 and 35. The scale was developed as a 5-point Likert type form where 5 is *Completely Agree* and 1 is *Completely Disagree*. On the SCMP-G scale, items 3, 15, 19, and 28 are in the form of negative questions and need to be inverted during evaluation. As the SCMP-G scale score increases, self-care management increases (Jones, 2001).

Compliance questionnaire was developed by Marston in 1969. Compliance questionnaire contains 11 compliance categories, including drug intake, diet, exercise, smoking cessation, alcohol consumption, etc. Compliance level is evaluated based on a 5-point Likert type scale ranging from 4 (*always*) to 0 (*never*). High scores indicate high and low scores indicate low compliance level (Hilbert, 2001).

### Results

Of the patients included in the study, 23.4% (n=52) were in the 66-75 age group and the mean age was  $\bar{X} = 62.71 \pm 13.31$ . 63.5% (n=141) of the patients were male, 73.4% (n=163) were married, 47.3% (n=105) were literate, 49.5% (n=110) were retired, 54.1% (n=120) were BağKur members (social security organization for artisans and the self-employed), 50% (n=111) had income equal to their expenses, 92.8% (n=52) had nuclear family and 79.3% (n=176) lived in city centers.

Of the patients included in the study, 35.6% (n=79) were diagnosed with chronic heart failure (CHF), 32.4% (n=72) were diagnosed with diabetes (DM) and 32% (n=71) were diagnosed with chronic obstructive pulmonary disease (COPD). Mean duration of diagnosis was  $\bar{X} = 7.78 \pm 7.12$  years. In the statistical evaluation

made for the diagnosis of chronic diseases; no significant difference was found between the diagnoses ( $\chi^2 = 0.554, P > 0.05$ ).

**Table 1. Comparison of Self-Care Management Mean Scores in Chronic Diseases According to Chronic Disease Diagnoses**

CD	$\bar{X} \pm SD$		Sum of Squares	SD	F	p
DM	123.00±9.70	Inter-Group	3972.51	2		
CHF	133.15±12.65	Intra-Group	28225.95	219		
COPD	126.94±11.36	Total	32198.46	221	15.41	.000

**Table 2. Comparison of Mean Compliance Scores in Chronic Diseases According to Chronic Disease Diagnoses**

CD	$\bar{X} \pm SD$		Sum of Squares	SD	F	p
DM	92.58±9.83	Inter-Group	105.12	2		
CHF	92.38±8.25	Intra-Group	16188.37	218	.70	.494
COPD	93.95±7.49	Total	16291.49	221		

**Table 3. Comparison of Mean Self-Care Management and Compliance Scores**

Self-Care Management	Compliance			
	B	SD	t	p
DM	125.51	10.97	11.43	p<0.001
CHF	113.18	15.85	7.13	p<0.001
COPD	182.18	16.05	11.35	p<0.001
Total	136.20	8.84	15.40	p<0.001

## Results of Self-Care Management and Compliance According to Chronic Disease Diagnoses

The comparison of mean SCMP-G scores of the patients according to Chronic Disease Conditions is given in Table 1. Accordingly; based on the results of the ANOVA analysis, a statistically significant difference was found between the mean SCMP-G scores of patients with DM, CHF, and COPD ( $F = 15.41, P < 0.05$ ). Post-Hoc Tukey-HSD test was performed to determine which disease group caused this difference, and it was found that the difference was caused by the CHF group and this group had a higher SCMP-G score compared to other chronic disease diagnoses.

Table 2 shows the comparison mean Compliance scores of the patients according to diagnosis of chronic disease. As seen in the table, ANOVA analysis showed no statistically significant difference between the mean compliance scores of patients with DM, CHF, and COPD ( $F = 0.70, P > 0.05$ ). It can be seen that there is no difference in terms of compliance levels among diagnoses of chronic disease.

## Correlation Results Between Self-Care Management and Compliance

Based on the results of the Regression analysis, a statistically significant correlation was found between mean Self-Care Management scores and mean Compliance scores ( $B = 136.20, P < 0.001$ ) (Table 3). As the Self-Care Management of the patients included in the study increased, Compliance with chronic diseases also increased. When regression analysis results were evaluated with respect to the chronic diseases included in the study, a significant correlation was found between Diabetes ( $B = 125.51, SD = 10.97, t = 11.43, P < 0.001$ ), CHF ( $B = 113.18, SD = 15.85, t = 7.13, P < 0.001$ ) and COPD ( $B = 182.18, SD = 16.05, t = 11.35, P < 0.001$ ) disease groups. A positive correlation was found between Self-Care Management and Compliance in all three chronic disease groups.

## Discussion

Of the patients included in the study, 35.6% were diagnosed with CHF, 32.4% with diabetes and 32% with COPD, and the mean duration of diagnosis was  $\bar{X} = 7.78 \pm 7.12$  years. In the statistical evaluation made with respect to the diagnosis of chronic disease, no statistically

significant difference was found between the disease diagnoses ( $\chi^2 = 0.554, P > 0.05$ ). The absence of a statistically significant difference between the disease groups shows the homogeneity of the sample group with respect to the diagnosis of CD.

Mean Self-care management scores in chronic diseases were compared according to chronic disease diagnoses. Table 1 shows the comparison of mean SCMP-G scores of patients with respect to their chronic diseases. Based on the results of the ANOVA analysis, a statistically significant difference was found between the mean SCMP-G scores of patients with DM, CHF, and COPD ( $F = 15.41, P < 0.05$ ). Post-Hoc Tukey-HSD test was performed to determine which disease group caused this difference, and it was found that the difference was caused by the CHF group and this group had a higher SCMP-G score compared to other chronic disease diagnoses. Self-care management is an important part of the treatment of heart failure, and healthcare professionals working with the heart failure patient group reached on the consensus that more specific recommendations should be made for patients regarding their lifestyles with respect to heart failure. The SCMP-G score of the patients with heart failure was higher than the other disease groups in our study, and this was attributed to the patients better managing the more specific self-care recommendations provided to this disease group (Lainscak, et al., 2011, da Conceição, 2015, Tawalbeh et al., 2017, Bryant & Alonzo, 2017, Kessing et al., 2016, Sedlar et al., 2017, Spaling et al., 2015 & Toback & Clark, 2017)

ANOVA analysis was performed to compare mean Compliance scores of patients between the disease groups. Analysis results showed no statistically significant difference between the mean compliance scores of patients with DM, CHF, and COPD ( $F = 0.70, P > 0.05$ ). It can be seen that there is no difference between CD diagnoses in terms of compliance levels (Table 2). Compliance with drug therapy in CHF patients is reported to be 50% (Alireza et al., 2014 & Karadakovan and Eti 2010)). In another study conducted on CHF patients, compliance rates for drugs, diet, exercise, smoking and alcohol use were found to be 47.3-74.7% (Yayehd et al., 2013). Different studies have reported that compliance with drug therapy is 41.3-54% in patients with COPD (Bourdeau et al., 2008, Bryant, et al., 2013). In a study

conducted on patients with Type 2 Diabetes, compliance levels for drug therapy (insulin injection) and diet were found to be 75.4% (Alireza et al., 2014). While chronic diseases are among the major stressors that change the compliance capacity of the individual, a number of situations brought by the disease (treatments, medications, disruption in family relationships, change in body image, pain, etc.) can also be a source of stress (Karadakovan & Eti 2010). Disruption in body image and lifestyle and role changes may occur. Therefore, management of chronic conditions includes management of psychosocial problems as well as management of physiological problems (Haskett, 2006 ). Regression analysis revealed a statistically significant correlation between self-care management and compliance ( $B = 136.20$ ,  $P < 0.001$ ) (Table 3). It can be argued that as self-care management of the patients increased, compliance with chronic diseases also increased. When regression analysis results were evaluated with respect to the chronic diseases included in the study, a significant positive correlation was found between self-care management and compliance in Diabetes ( $B = 125.51$ ,  $SD = 10.97$ ,  $t = 11.43$ ,  $P < 0.001$ ), CHF ( $B = 113.18$ ,  $SD = 15.85$ ,  $t = 7.13$ ,  $P < 0.001$ ) and COPD ( $B = 182.18$ ,  $SD = 16.05$ ,  $t = 11.35$ ,  $P < 0.001$ ) disease groups. Self-management programs include teaching patients how to manage the physical and psycho-social outcomes and symptoms of their illnesses, how to perform their treatments and how to make necessary lifestyle changes. Self-management training increases self-efficacy, self-efficacy increases compliance, and compliance in turn improves clinical outcomes and increases quality of life. Disease management and self-management programs reduce hospitalization by approximately 25% (Barlow et al., 2002, Powell et al., 2008). Self-care education given to patients increases the patient's compliance with the disease and awareness regarding the need to assume responsibility to manage the disease (Gold & McClung, 2006). In a meta-analysis study on self-care management in diabetic patients, self-care management was found to increase glycemic control. Increase in glycemic control was associated with increased compliance with the disease (Minet et al., 2010). In another study conducted with diabetic patients, it was found that patients showed better physical activity, blood glucose level follow-up, and healthy eating

behaviors and more effective coping behaviors towards complications of diabetes as a result of self-care management education for Type 2 diabetes provided by nurses (Hunt, 2013). In a study conducted on COPD patients, it was reported that self-care education increased compliance with the disease (Efrainsson et al, 2008)). In another study conducted on CHF patients, self-care education given to patients improved the self-care management of the patients and it was determined that the patient's compliance with the disease increased as a result of this improvement (Koelling et al., 2005).

### Conclusion

In conclusion, as the self-care management of the patients within the scope of this study increased, the compliance of patients with chronic disease also increased; and as self-care management of patients in the disease groups increased, compliance also increased.

### References

- Alireza Shamsi, Fatemeh Khodaifar, Seyed Masoud Arzaghi, Farzaneh Sarvghadi, Arash Ghazi (2014) Is there any relationship between medication compliance and affective temperaments in patients with type 2 diabetes? *J Diabetes Metab Disord.* 27;13(1):96.
- Ausili D, Masotto M, Dall'Ora C, Salvini L, Di Mauro S. (2014) A literature review on self-care of chronic illness: definition, assessment and related outcomes. *Prof Inferm.* 67(3):180-9.
- Barlow J, Wright C, Sheasby J, Turner A, Hainsworth J. (2002) Self-management approaches for people with chronic conditions: a review. *Patient Educ Couns.* 48:177-87
- Begum N, Donald M, Ozolins LZ, Dower J. (2011) Hospital admissions, emergency department utilisation and patient activation for self-management among people with diabetes, *Diabetes Research and Clinical Practice.* 93:260-267
- Bourbeau J, Bartlett SJ. (2008) Patient adherence in COPD. *Thorax.* 63(9):831-8.
- Bryant J, McDonald VM, Boyes A, Sanson-Fisher R, Paul C, Melville J. (2013) Improving medication adherence in chronic obstructive pulmonary disease: a systematic review. *Respiratory Research.* 14(1):109.
- Bryant R, Alonzo A. (2017) Schmillen H. Systematic review of provider involvement in heart failure self-care interventions. *J Am Assoc Nurse Pract.* 29(11):682-694.
- Chen IH, Chi MJ. (2015) Effects of self-care behaviors on medical utilization of the elderly

- with chronic diseases - A representative sample study. *Arch Gerontol Geriatr.* 60(3):478-85.
- Choudhry NK, Glynn RJ, Avorn J, Lee JL, Brennan TA, Reisman L, Toscano M, Levin R, Matlin OS, Antman EM, Shrank WH. (2014) Untangling the relationship between medication adherence and post-myocardial infarction outcomes: medication adherence and clinical outcomes. *Am Heart J.* 167:51–8. e5.
- da Conceicao AP, dos Santos MA, dos Santos B, and Diná de Almeida Lopes Monteiro da Cruz (2015) Self-care in heart failure patients. *Rev Lat Am Enfermagem.* 23(4):578-86
- Durna Z, Oguz G. (2018) Chronic Diseases and Management of Chronic Diseases. Aşti N, Ed.. A Teamwork with Holistic Approach in the Management of Care in Chronic Diseases. Ankara: Turkey Clinics. p.1-10.
- Dwarswaard J, Bakker EJM, Staa ALS, Boeije HR (2016) Self-management support from the perspective of patients with a chronic condition: a thematic synthesis of qualitative studies *Health Expect.* 19(2): 194–208.
- Efrainsson EO, Hillervik C, Ehrenberg A. (2008) Effects of COPD self-care management education at a nurse-led primary health care clinic. *Scand J Caring Sci* 22:178-185
- Gold DT, McClung B. (2006) Approaches to patient education: emphasizing the long-term value of compliance and persistence. *Am J Med.* 119:325–75.
- Ha Dinh TT, Bonner A, Clark R, Ramsbotham J, Hines S. (2016) The effectiveness of the teach-back method on adherence and self-management in health education for people with chronic disease: a systematic review *JBIG Database System Rev Implement Rep.* 14(1):210-47
- Hamine S, Gerth-Guyette E, Faulx D, Green BB, Ginsburg AS. (2015) Impact of mHealth chronic disease management on treatment adherence and patient outcomes: a systematic review. *J Med Internet Res.* 24:17(2):e52
- Haskett T. (2006) Chronic illness management: Changing the system. *Home Health Care Management Practice.* 18:492–496
- Hunt CW, (2013) Self-care management strategies among individuals living with type 2 diabetes mellitus. *Nursing: Research and Reviews.* 3:99–105
- Jones LC. (2001) Measuring guarding as a self-care management process in chronic illness: The SCMP-G. Strickland OL, Dilorio C. Editors. *Measurement of nursing outcomes.* New York:Springer Publishing Company. 150-158
- Incirkus K, Nahcivan N. (2011) Validity and Reliability Study of Turkish Version of The Patient Assessment of Chronic Illness Care-Patient Form, *DEUHYO ED* 2011, 4 (1), 102-109.
- Karadakovan A, Eti Aslan F. (2010) Internal and Surgical Care. Adana: Nobel Medical Bookstores. 99-111.
- Kessing D, Denollet J, Widdershoven J, Kupper N. (2016) Psychological Determinants of Heart Failure Self-Care: Systematic Review and Meta-Analysis. *Psychosom Med.* 78(4):412-31
- Koelling TM, Johnson ML, Cody RJ, Aaronson KD. (2005) Discharge education improves clinical outcomes in patients with chronic heart failure. *Circulation.* 111:179–185
- Lainscak M, Blue L, Clark AL, Dahlstrom U, Dickstein K, Ekman I, McDonagh T, McMurray JJ, Ryder M, Stewart S, Stromberg A, Jaarsma T. (2011) Self-care management of heart failure: practical recommendations from the patient care committee of the heart failure association of the european society of cardiology. *European Journal of Heart Failure.* 13:115–126
- Miller TA. (2016) Health literacy and adherence to medical treatment in chronic and acute illness: A meta-analysis *Patient Education and Counseling* 99:1079–1086
- Minet L, Møller S, Vach W, Wagner L, Henriksen JE. (2010) Mediating the effect of self-care management intervention in type 2 diabetes: a meta-analysis of 47 randomised controlled trials. *Patient education and counseling.* 80:29-41
- Ozdemir U, Tascı S. (2013) Psychosocial Problems and Care in Chronic Diseases, Erciyes University Faculty of Health Sciences Journal. 1: 1: 57-72
- Powell LH, Calvin JE Jr, Mendes de Leon CF, Richardson D, Grady KL, Flynn KJ, Rucker-Whitaker CS, Janssen I, Kravitz G, Eaton C; Heart Failure Adherence and Retention Trial Investigators. (2008) The heart failure adherence and retention trial (hart): design and rationale. *Am Heart J.* 156:452-60
- Sedlar N, Lainscak M, Mårtensson J, Stromberg A, Jaarsma T, Farkas J (2017) Factors related to self-care behaviours in heart failure: A systematic review of European Heart Failure Self-Care Behaviour Scale studies. *Eur J Cardiovasc Nurs.* 16(4):272-282
- Spaling MA, Currie K, Strachan PH, Harkness K, Clark AM (2015) Improving support for heart failure patients: a systematic review to understand patients' perspectives on self-care. *J Adv Nurs.* 71(11):2478-89.
- Strickland OL, Dilorio C. editors *Measurement of nursing outcomes.* New York: Springer Publishing Company 245-264
- Tawalbeh LI, Al Qadire M, Ahmad MM, Aloush S, Abu Sumaqa Y, Halabi M. (2017) Knowledge and self-care behaviors among patients with heart failure in Jordan. *Res Nurs Health.* 40(4):350-359.
- Toback M, Clark N. (2017) Strategies to improve self-management in heart failure patients. *Contemp Nurse.* 53(1):105-120

- WHO (2018). Global Health Estimates 2016: Deaths by Cause, Age, Sex, by Country and by Region, 2000–2016. Geneva: World Health Organization; 2018
- Wu JR, Moser DK, Lennie TA, (2008) Medication adherence in patients who have heart failure: a review of the literature. *Nurs Clin North Am.* 43:133–53.
- Yayehd K, Damorou F, N'cho Mottoh MP, Tchérou T, Johnson A, Pessinaba S, Tété Y, Diziwiè AM. (2013) Compliance to treatment in heart failure patients in Lomé *Ann Cardiol Angeiol (Paris).* 62(1):22-7