



Case Report

Nursing Approach to the Patient with Left Ventricular Assist Device According to the Health Promotion Model: Case Report

 Gamze Ataman Yıldız,  Fatma Eti Aslan

Department of Nursing, Bahcesehir University Faculty of Health Sciences, Istanbul, Türkiye

Abstract

After left ventricular assist devices (LVADs) are implanted, significant changes occur in patients' lifestyles. It was planned to use Pender's Health Promotion Model (HPM) to evaluate these patients and improve their health behaviors. In this direction, it was aimed to evaluate the individual and to create healthy lifestyle and behavior change. A 49-year-old male patient with a diagnosis of heart failure was implanted with an LVAD when medical treatments did not yield results and a suitable heart for heart transplantation could not be found. With the aim of improving the patient's health, current and risk group nursing diagnoses were determined in the subjects of healthy lifestyle behaviors, health responsibility, spiritual development, interpersonal relationships, stress management, exercise, and nutrition in line with SGM. The model guided the individual who is responsible for controlling his/her health on how to gain health-promoting behaviors. With Pender's SGM, it was seen how the patient with LVAD could manage his life with the device by developing healthy lifestyle behavior change. It is thought to contribute to the improvement of the patient's quality of life after discharge.

Keywords: Health promotion model, heart failure, left ventricular assist device.

Cite This Article: Ataman Yıldız G, Eti Aslan F. Nursing Approach to the Patient with Left Ventricular Assist Device According to the Health Promotion Model: Case Report. BAU Health Innov 2023;1(2):101–104.

Heart failure (HF) is a structural and functional disorder in which the heart cannot pump enough blood to provide adequate perfusion to tissues, even at rest. HF, in which symptoms such as dyspnea, edema, cough, and fatigue are observed, is a chronic disease that affects daily life activities and the quality of life of individuals.^[1-3] Despite medical and technological advances, HF is one of the diseases with high mortality and morbidity rates and a poor prognosis.^[4] The incidence and the number of patients hospitalized due to HF are increasing in developed and developing countries every day.^[5] The most effective treatment for HF is heart transplantation, but a left ventricular assist device (LVAD), which is an alternative treatment option, has started to be implanted instead because of insufficient organ availability. These devices are

increasingly being used as a permanent treatment option for patients who are not suitable for heart transplantation due to organ failure or multiple comorbidities.^[6,7]

Thanks to nursing theories, information obtained from patients is analyzed, classified, and evaluated with a holistic perspective.^[8] Recently, the role of nurses in protecting and improving health has gained increasing importance. Pender's Health Promotion Model (HPM) aims to help the individual perceive healthy lifestyle behaviors by determining health promotion behaviors related to lifestyle and examining the factors affecting experiences and health behavior perceptions.^[9,10] According to SGM, healthy lifestyle behaviors include health responsibility, spiritual development, stress management, interpersonal relationships, exercise, and nutrition.^[11]

Address for correspondence: Gamze Ataman Yıldız, MD. Bahçeşehir Üniversitesi Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, İstanbul, Türkiye

Phone: +90 542 775 17 80 **E-mail:** gamzeataman39@gmail.com

Submitted: March 01, 2024 **Revised:** March 12, 2024 **Accepted:** March 21, 2024 **Available Online:** May 08, 2024

©Copyright 2024 by BAU Health and Innovation - Available online at www.bauhealth.org

OPEN ACCESS This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.



In this case, nursing care aimed at improving the health behaviors of a patient who was fitted with a LVAD was applied by using the SGM.

Components of the HPM

Individual Characteristics and Experiences

Individuals' behaviors are influenced by their personal characteristics and previous experiences.^[12]

Behavior-Specific Perceptions

Perceived Benefits of the Action

It is defined as the fact that it will be easier for individuals to start and maintain this health behavior when they believe in the positive effect of the health behavior to be acquired on their disease.^[13]

Perceived Barriers to Action

It is the perception that makes it difficult to start and maintain the recommended behavior or the perception of its negative aspects.^[13]

Perceived Self-Efficacy

It is the individual's determination, power to be effective, and self-belief in health promotion behavior.^[14]

Interpersonal influences

It is the thoughts and attitudes of other people about the behavior.

Situational Influences

Individual perception and understanding of the behavior.^[15]

Outcome of Behavior

Meeting Urgent Demands and Preferences

It is the ability of individuals to use their own preferences among alternative behaviors.^[13]

Adherence to the Action Plan

It is the stage where the individual makes a plan about the desired health behavior and starts to implement it.^[15]

Health promotion behavior

It is the ability of individuals to implement the recommended behavior and make it a lifestyle.^[13]

Case Report

C.D. is referred to the organ transplant center from the cardiology outpatient clinic with a diagnosis of HF. C.D. is 51-years-old, a primary school graduate, married, and a

disability pensioner. Echocardiography showed an ejection fraction of 20% and no right HF. The patient, who has no other chronic disease, regularly uses medication for HF and regularly visits the hospital for follow-up visits. In the last month, he applied to the emergency department 4 times with complaints such as shortness of breath, edema in the legs and abdomen, an increase in weight, waking up at night as if he were suffocating, sleeping with three pillows, weakness, and breathlessness while walking even in the house. The patient's complaints were alleviated for a few days after the emergency admission but increased again. She stated that she had to go to the toilet 5–6 times at night and could not sleep because of shortness of breath. He quit smoking 2-years-ago and never used alcohol. CD stated that he could not spend time outside his home because of these complaints. It was decided to put the patient on the heart transplant waiting list due to increasing complaints, but when the patient's complaints increased further, it was deemed appropriate to implant a LVAD.

Investigation of the Case According to Pender's HPM

Personal Characteristics and Experiences

- 51 years old
- He does not smoke or drink alcohol. He takes medication for HF. He has no other chronic diseases.
- He has difficulty performing daily life activities and needs help.
- Due to the progression of HF, he cannot sleep at night and goes to the toilet 5–6 times.
- LVAD was implanted due to HF.

Perceived Benefit

CD has high motivation for health responsibility, one of Pender's components of healthy lifestyle behavior. She perceives that she feels better after the surgery in terms of her physical symptoms, and she intends to increase this by adapting to the implanted device. This health responsibility includes diet, exercise, motivation, and protection from device infection and embolism.

Perceived Barriers

CD thinks that she will have difficulties in this process, but she does not have any barriers arising from her environment.

Perceived Self-Efficacy

CD states that she is determined to develop healthy lifestyle behaviors in her future life.

Interpersonal Influences

CD's family and close environment were not informed about the LVAD. Before and after the operation, he, his wife, and their children were educated about the use of the device and the rules to be considered and followed when living with the device.

Situational Influences

CD thinks that her family's support in all matters will facilitate her adaptation to healthy lifestyle behaviors.

Behavioral Decision-Making

CD stated that she paid attention to her nutrition and exercise, paid attention to the dressing of the driveline entry site due to the risk of infection related to the device, did not interrupt INR follow-ups due to the risk of thrombus related to the device, and even bought a device to measure it at home to improve and sustain her health by adopting healthy lifestyle behaviors with the LVAD.

Urgent, Prioritized Requests and Goals

CD is mostly at home during the day as she is retired. Since healthy lifestyle behaviors should be a way of life and health is more important than anything else, it was emphasized that dressing, diet, medications, and maintenance of the device should be one of the priorities.

Health Promotion Behavior

CD stated that she had changed her behavior with the LVAD and made it a way of life. CD, whose HF symptoms decreased with the device, stated that he was aware that he could maintain his health with his new lifestyle.

Discussion

The success of LVAD implantation surgery focuses not only on the operation being performed without complications but also on the management of nutrition, physical activity, medication use, and device care by nurses with a holistic approach and the education of the patient and family about these. In this case, Pender's SGM was used effectively, and lifestyle changes were adopted and supported in terms of adaptation. It was observed that the patient, who was fitted with a LVAD using the HPM, paid attention to nutrition and exercise, paid attention to the dressing of the driveline entry site due to the risk of infection related to the device, did not interrupt INR follow-ups due to the risk of thrombus related to the device, and even bought a device to measure it at home. It was observed that he was aware that he could maintain his health with his new lifestyle.

Conclusion

Since the LVAD will be with the individual throughout his or her life, the individual needs to cope with many factors for adaptation to the device. It is thought that healthy lifestyle behaviors are effective in coping with these factors and in the patient's adaptation to the device. It has been observed that the use of nursing theories and models in patient care increases the quality of care and patient satisfaction. In addition, randomized controlled studies are also recommended in terms of evidence generation.

Disclosures

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Authorship Contributions: Concept – F.E.A.; Design – G.A.Y.; Supervision – F.E.A.; Resource – G.A.Y.; Materials – G.A.Y.; Data Collection and/or Processing – G.A.Y.; Analysis and/or Interpretation – G.A.Y.; Literature Search – F.E.A.; Writing – G.A.Y.; Critical Reviews – F.E.A.

Conflict of Interest: All authors declared no conflict of interest.

Use of AI for Writing Assistance: Not declared.

Financial Disclosure: The authors declared that this study received no financial support.

Peer-review: Externally peer-reviewed.

References

1. Arrigo M, Jessup M, Mullens W, Reza N, Shah AM, Sliwa K, et al. Acute heart failure. *Nat Rev Dis Primers* 2020;6(1):16.
2. Chen J, Aronowitz P. Congestive heart failure. *Med Clin North Am* 2022;106:447–58.
3. Hu Y, Jiang J, Xu L, Wang C, Wang P, Yang B, et al. Symptom clusters and quality of life among patients with chronic heart failure: A cross-sectional study. *Jpn J Nurs Sci* 2020;18:e12366.
4. Groenewegen A, Rutten FH, Mosterd A, Hoes AW. Epidemiology of heart failure. *Eur J Heart Fail* 2020;22(8):1342–56.
5. Fuentes-Abolaño IJ, Stubbs B, Pérez-Belmonte LM, Bernal-López MR, Gómez-Huelgas R, Cuesta-Vargas AI. Physical functional performance and prognosis in patients with heart failure: A systematic review and meta-analysis. *BMC Cardiovasc Disord* 2020;20(1):512.
6. Crespo-Leiro MG, Metra M, Lund LH, Milicic D, Costanzo MR, Filippatos G, et al. Advanced heart failure: A position statement of the heart failure association of the European society of cardiology. *Eur J Heart Fail* 2018;20:1505–35.
7. Sridharan L, Wayda B, Truby LK, Latif F, Restaino S, Takeda K, et al. Mechanical circulatory support device utilization and heart transplant waitlist outcomes in patients with

- restrictive and hypertrophic cardiomyopathy. *Circ Heart Fail* 2018;11:e004665.
8. Habibzadeh H, Shariati A, Mohammadi F, Babayi S. The effect of educational intervention based on Pender's health promotion model on quality of life and health promotion in patients with heart failure: An experimental study. *BMC Cardiovasc Disord* 2021;21(1):478.
 9. Karatas T, Polat U. Effect of nurse-led program on the exercise behavior of coronary artery patients: Pender's health promotion model. *Patient Educ Couns* 2020;104:1183–92.
 10. Dündar T, Gerçek E. The use of interaction theory in nursing in the postpartum period: A case report. *J Ege Univ Nurs Faculty* 2020;36:67–72.
 11. Haghi R, Ashouri A, Karimy M, Rouhani-Tonekaboni N, Kasmaei P, Pakdaman F, et al. The role of correlated factors based on Pender health promotion model in brushing behavior in the 13–16 years old students of Guilan, Iran. *Ital J Pediatr* 2021;47:111.
 12. Polat F, Aylaz R. Supporting physical exercise in coping with symptoms in menopausal women based on Pender's health promotion model. *J Inonu Univ Vocation Sch Health Serv* 2020;1:150–61.
 13. Pouresmali A, Alizadehgoradel J, Molaei BM, Fathi D. Self-care behavior prevention of Covid-19 in the general population based on Pender health promotion model. *Res Sq* 2020;1:1–17.
 14. Zhong L, Jin Y, Gu Y, Wenjing O, Zheng Y, Yang T, et al. Clinically ill patients' experiences of early mobilisation after liver transplantation: A qualitative study using Pender's health promotion model. *Int J Rehabil Res* 2023;46(1):92–7.
 15. Darkhor S, Estebarsari F, Hosseini M, Charati JY, Vasli P. Effect of health promotion intervention on nurses' healthy lifestyle and health-promoting behaviors: RCT study. *J Adv Pharm Educ Res* 2018;8(1):108–14.