Kufa Journal for Nursing Sciences
Open Access Full Text Article

Publisher
University of Kufa, Faculty of Nursing

Received: 09 June, 2024
Accepted: 18 September, 2024
Published: 04 October, 2024
Vol. 14(2), 2024: 30 – 40

https://doi.org/10.36321/kjns.vi20242.16508

ORIGINAL RESEARCH

Resilience and Self-Care in Patients with Heart Failure: A Cross-Sectional Study

Qasim K. Hayef [1], Alice Khachian [2], Alaa J. Kadhim [3], Mahnaz Seyedoshohadaee [4], Shima Haqhani [5].

[1] *Al-Hussein Teaching Hospital in Thi Qar, Ministry of Health, Thi Qar, Iraq.*
[2, 4] *Nursing and Midwifery Care Research Center, Department of Medical Surgical Nursing, School of Nursing and Midwifery, Iran University of Medical Sciences, Tehran, Iran.*
[3] *Adult Nursing Department, College of Nursing, University of Baghdad, Baghdad, Iraq.*
[5] *5Department of Statistics, School of Public Health, Iran University of Medical Sciences, Tehran, Iran.*

CORRESPONDING AUTHOR: Qasim Kani Hayef, Al-Hussein Teaching Hospital in Thi Qar, Ministry of Health, Thi Qar, Iraq.
Email: renas.mohamad@uor.edu.krd

ABSTRACT

Background: A key component of managing heart failure, self-care can significantly affect patient outcomes. Patients may find the constant and intricate demands of self-care stressful, and they may need to show resilience to manage their symptoms.

Objectives: The present study aimed to identify resilience and self-care among patients with heart failure.

Methodology: The design of the present study was cross-sectional. The research population consisted of heart failure patients visiting the cardiac hospitals admitted to the cardiac ward. A convenience sampling method was used to select 200 patients with heart failure. The data were collected from April 6th, 2023 to June 29th, 2023 about the participants' demographic variables, Self-Care of Heart Failure Index (SCHFI V6.2 English), and the Connor-Davidson Resilience Scale (CD-RISC). The data were analyzed using descriptive statistics (percentage, frequency, standard deviation, mean score) for the demographic variables. To assess reliability, Cronbach's alpha was used.

Results: The present study showed that the majority of sample (n=185, 92.5%) had a medium level of self-care in symptom perception (Mean±SD= 28.86±16.32), self-care maintenance (Mean±SD= 34.2±15.63), and self-care management (Mean±SD= 35.52±17.25). The research findings showed a strong negative association between patients' resilience and self-care ($p<0.001$). There was a statistically significant association between self-care and participants' marital status ($p=0.02$). Self-care was greater among those who were married.

Conclusion: The present findings showed that patients with heart failure had a moderate level of self-care and resilience. There were associations between resilience and self-care in heart failure patients. The variables that may mediate or affect self-care need to be well recognized by the research population.

Keywords: Resilience, Self-care, Heart failure.

How to Cite: Hayef , Q. K., Khachian, A., Kadhim, A. J., Seyedoshohadaee, M., & Haqhani , S. (2024). Resilience and self-care in patients with heart failure: A cross-sectional study. *Kufa Journal for Nursing Sciences. 14*(2). 30–40. https://doi.org/10.36321/kjns.vi20242.16508

INTRODUCTION

Heart failure that persists over time is still a major cause of mortality and impaired functioning in adults (Albert, 2016). The annual economic burden of heart failure on a global scale is approximated to be 108 billion USA Dollar (Clark et al., 2022). Heart failure is the primary cause of mortality in the United States, and the number will increase by affecting approximately 9.7M to 12.9M million adults living with heart failure by 2026 (Mohebi et al., 2022).

Patients in a social environment are expected to shoulder the most of burden for heart failure self-care, and it noteworthy that a basic understanding of HF serves as the foundational antecedent for successful self-care. Self-care is a crucial aspect of managing heart failure and has a direct impact on patient outcomes. Managing a condition like self-care can be challenging for patients with chronic conditions such as heart failure due to various barriers and its continuous and complex demands, which can be stressful to patients (van Rijn et al., 2022). Developing a sound knowledge of HF does not necessarily turn into effective self-care. This might be due to the fact that patients often manage their heart failure in conjunction with their family caregivers. As a result, information that is shared between the patient and caregivers, as opposed to the patient's knowledge alone, is probably more crucial for completely supporting self-care competence (Bidwell et al., 2018). As a result, patients may need to exhibit resilient behaviors to effectively manage their condition. Having resilience can be beneficial when it comes to the supplying of chain operations (Jin et al., 2023).

Resilience can help mitigate the challenges of daily self-care and promote both physical and emotional well-being (Seyedoshohadaee et al., 2018). Resilience is known to share several psychobiological pathways and may exhibit similar affective, somatic, and cognitive symptoms (Yao & Hsieh, 2019). For example, certain facets of resilience, such as attitudes towards an individual's perceived ability to cope with stressors, have been observed to significantly affect the prediction of depression (Sisto et al., 2019). Due to the prognostic risk associated with depression in patients with cardiovascular diseases, specifically anhedonia depression (Toukhsati et al., 2017).

Resilience was neither a mediator nor a moderator in the relationship between self-care behaviors. The potential of anxiety and depression to decrease resilience may be a limiting factor. Additional variables that examine how resilience may affect self-care behaviors need to be explored so that interventions can trigger and improve self-care behaviors in patients with heart failure (Kutcher et al., 2023). Gheiasi et al. (2023) divided the participants' experiences into two main themes, namely "the driving forces behind treatment adherence" and "the deterrent forces behind treatment adherence". These results represented the facilitators and inhibitors of treatment adherence in patients with HF which could affect their self-care.

To prevent exacerbations and maintain overall wellness, people with heart failure must make ongoing lifestyle changes and management decisions. People with heart failure need to show resilience, which is the capacity to effectively adapt and deal with stressors and barriers.

AIMS OF THE STUDY

The present study was, therefore, designed to examine self-care and resilience in patients with heart failure admitted to the cardiac ward of Al-Nassyriah Hospital in Dhi Qar, Iraq.

METHODOLOGY

Design of study and participants

The present descriptive, cross-sectional research aimed to assess HF patients' ability to self-care behaviors and the relationship with their resilience. This study was conducted in the cardiac ward of AL-Nasiriyah Teaching Hospital in Dhi Qar,

Iraq. The research population consisted of patients with heart failure who visited cardiac hospitals and were admitted to the cardiac ward. The study recruited 200 patients with heart failure in Al-Nasiriyah Teaching Hospital. Based on the availability of patients and the researcher, a convenience sampling method and collected data were used self-reported survey.

Data collection and instruments

The inclusion criteria were 18-65 years of age, ability to do self-care, diagnosis (by physician) with HF for more than 6 months, visiting cardiac hospitals, and hospitalization in the cardiac ward, having any grade of HF with different ejection fraction, ability to read, speak and understand Arabic, healthy vision and hearing, no comorbidities such as cognitive impairment based on physician diagnosis.

The data were collected using a tripart questionnaire. The first part enquired about demographic and clinical data. The former included age, Body Mass Index (BMI), sex, marital status, and educational level. The second part collected data using the Connor-Davidson Resilience Scale (CD-RISC) (Connor & Davidson, 2003). The CD-RISC is a resilience measurement instrument that consists of 25 items, each evaluated on a 5-point Likert scale (0-4). The scores show the degree of resilience, with higher scores indicating greater resilience.

Patients' self-care was measured using Self-Care of Heart Failure Index (SCHDI) (Vellone et al., 2020). SCHDI is a 29-item Likert-Scale composed of three subscales measuring self-care maintenance, symptom perception, and self-care management. Response choices for all items in the scale were summed up and standardized to achieve a possible score of 0 to 100, with higher scores indicating better self-care (Vellone et al., 2020).

Validity and reliability of questionnaires

The degree to which an instrument corresponds to the intended purpose of measurement is what we mean by validity. The content validity was verified by a team of three experts from different fields after translating the questionnaire from English to Arabic. These experts were from Adult Nursing Department members from the Nursing College, University of Musol, Southern Technical University, Department of Community Health, Nasiriyah Technical Institute and Kut Technical Institute/Middle Technical University / Department of Community Health. All their suggestions and feedback were used to ensure the validity of survey.

Cronbach's alpha test was used with a sample of 10 patients with heart failure, who are not included in the main sample of study. To test the reliability of scales, Cronbach's alpha test was used, which was estimated at 0.795 for the Connor-Davidson Resilience Scale (CD-RISC) and 0.827 for the Self-Care of Heart Failure Index (SCHFI V6.2 English).

Data Analysis

The data were analyzed using SPSS Version 26. Descriptive statistics were used to analyze patients' demographic variables, resilience and self-care. Among demographic variables, health, resilience and self-care, interval variables were summarized as mean, standard deviations, and non-interval variables as frequencies and percentages. Inferential statistics (Chi-square, paired- and independent-samples T-test and analysis of covariance) were used next. The correlation between resilience and self-care and interval variables was tested using Pearson's correlation coefficient. If there was a linear correlation in a scatter-plot; otherwise, Spearman's rho was used. Bivariate analyses were used to test the association between resilience and self-care and patients' demographic variables and state of health. Variables significantly associated with self-care in these analyses were tested using a logistic regression, reporting the odds ratios and confidence intervals for predictive variables with a level of significance.

RESULTS

Table 1 shows that around half of the sample (49.5%) were within the age range of ≥ 60 years. More than half (58.5 %) were male, and 67% of participants were married. 43% completed secondary school and 40% were obese.

Table 2 shows that the mean and standard deviation of self-care maintenance (20.26±4.69) was low and the mean and standard deviation of self-care management was the highest (12.40±3.11). The mean and standard deviation of patients' symptom perception was the lowest (11.2±2.94). However, the overall mean score of heart failure self-care was 43.85±7.23.

Table 3 shows that the total mean score of resilience for heart failure patients was (M±SD= 58.29±6.86). The results also showed that the mean of tolerance of negative affect (M±SD= 56.14±11.32) was the lowest while the highest mean score was that of self-control (Mean±SD= 62.54±17.88).

Table 4 shows that a significant negative correlation between patients' resilience and self-care ($p<0.001$). There is also a negative relationship between self-care maintenance and resilience in terms of tolerance ($p=0.001$), self-control ($p=0.029$), spiritual influences ($p<0.001$) and resilience ($p=0.041$). Symptom perception was negatively correlated with personal competence ($p=0.001$), tolerance of negative affect ($p<0.001$), positive acceptance ($p=0.003$), self-control ($p<0.001$) and resilience ($p<0.001$). Self-care management had a negative relationship with tolerance of negative affect ($p=0.042$), positive acceptance ($p=0.016$), self-control ($p=0.027$) and resilience ($p=0.02$). The overall findings show a negative relationship between self-care and personal competence ($p=0.007$), tolerance of negative affect ($p<0.001$), positive acceptance ($p=0.012$), self-control ($p<0.001$) and spiritual influences ($p=0.039$).

Table 5 shows a significant relationship between self-care and marital status ($p=0.02$). Tukey test showed that self-care was higher among patients who were married ($p=0.014$).

DISCUSSION:

The present study examined the relationship between self-care and resilience among patients with heart failure. The results showed that, similar to the results of another study by Khachian et al. (2016), the overall self-care score in heart failure was at a moderate level. Another cross-sectional study reported a similar finding to the currents study. It reported that patients with a chronic heart failure had an adequate level of self-care (mean scores ≥ 70) (van Rijn et al., 2022).

The present study showed that the level of patients' symptom perception and self-care maintenance was low while their self-care management was high. These findings are consistent with some research conducted by Szuba (2023) on older adults with heart failure. The findings showed that their self-care did not align properly with the actual implementation of self-care (Chuang et al., 2019). A comparative study by Chang et al. (2017) showed that self-care maintenance reduced depressive symptoms, which indirectly decreased self-care confidence (indirect effect: -0.22, 95% CI: -0.36,-0.11), and this path was only significant for patients with moderate and high levels and not those with low levels of resilience. Furthermore, a cross-sectional survey by Mei et al. (2019) found that men's and women's mean scores of healthcare maintenance were 51.4 ± 14.8 and 55.6 ± 14.1, respectively ($t = -2.066$, $P < 0.05$).

This study showed that the level of resilience for patients with heart failure was moderate. The results also showed an impact of negative affect on patients' resilience when their self-control was the highest. These results are consistent with a cross-sectional study that showed that patients with coronary heart diseases had a moderate level of resilience with a higher level observed in those with no prior history of any heart surgery (Al Ali & Al

Ramamneh, 2022). Furthermore, resilience such as tolerance of the negative effects of cardiovascular diseases positively affects their quality of life (Kamalinedjad et al., 2020). An Iranian randomized controlled trial revealed that the negative emotion tolerance of resilience in patients with HF can be increased when patients' spiritual care is promoted (Movahedimoghadam et al., 2022). A recent literature review highlighted that spiritual belief and coping strategies have a significant effect on the resilience of patients with heart failure (Abshire Saylor et al., 2023). Moreover, nonadherence has been associated with negative emotions among patients with HF in which, resilience mediated the effects of self-care activation and hope on medication adherence (Meraz et al., 2023).

Adequate self-control by patients with HD results from their confidence and feeling of adequacy in face of a disease. Patients undervalue the disease detrimental emotional effects because they regard it as controlled and rely on their feeling of efficiency and sufficiency to handle difficult situations (Rafei et al., 2020). The level of resilience is negatively correlated with susceptibility to disease. Positive affect and self-control to view everything as a learning opportunity, an emphasis on one's own talents and attributes, and a tendency to exhibit higher levels of stress in difficult circumstances are all qualities of resilient people (Rochal et al., 2022).

The present study showed a significant negative correlation between patients' resilience and self-care ($p<0.001$). The relationship between patients' resilience and self-care is an important aspect of managing chronic conditions, such as heart failure or other health challenges because The study community in Dhi Qar has different behaviors that affected the reality of the two scales in a negative direction between flexibility and self-care. The results of a cross-sectional study of patients with chronic obstructive pulmonary disease showed that resilience was associated with self-care confidence and quality of life. The patients expressed better self-care confidence and higher quality of life when they had a higher level of resilience (Pouw et al., 2023). Another cross-sectional survey found that among the 15 self-care activities, four showed a statistically significant association when compared to the average resilience, highlighting: healthy eating and professional guidance for patients' resilience and self-care (Boell et al., 2020).

The current study found a significant relationship between self-care and patients' marital status. This result agrees with the results of another study by Asadi et al. (2019), which reported the relationship between marital status and self-care ability. It showed higher scores in unmarried patients. A descriptive study among patients with HF highlighted a statistically significant negative association between self-care and their marital status (Navidhamidi et al., 2019).

The present study found that nearly half of the participants (49.5%) were aged 60 years or older. There is an agreement in the studies of National Institutes of Health (2023) on that those 65 years old and over have a markedly increased risk of a heart attack, stroke, coronary heart disease (also known as heart disease), and heart failure compared to those at a younger age (National Institutes of Health, 2023).

More than half of the present participants were male (58.5%). This finding is consistent with a study conducted by Regitz-Zagrosek (2020) that showed that males had a greater frequency of heart failure occurrences, while the overall prevalence rate remains comparable between males and females due to the extended survival period experienced by the latter subsequent to the onset of heart failure. Age differences can partially account for the variations in treatment, hospital cost, and quality of care between sexes. There are differences in the life circumstances experienced by males and females afflicted with heart failure. Men tend to find physical and social limitations on their daily activities the most troublesome, while women tend to struggle more with restrictions that hinder their support of family and friends. The female

patients with heart failure tend to attribute more favorable interpretations to their medical condition. Notwithstanding this, it seems that women tend to face a comparatively lower overall quality of life in comparison to men. It is imperative to underscore the established sex differences observed among individuals diagnosed with heart failure according to clinical guidelines, and subsequently incorporate these findings into routine patient care practice.

The current study argued that most patients (67.0%) were married. This finding is similar to another study conducted by Schultz et al. (2022). It is noteworthy that there is a positive and independent association between marital status and cardiovascular outcomes in those at a high risk of cardiovascular diseases. This implies that marital status alone affects cardiac outcomes. Specifically, research has shown that those who are not married have a higher mortality rate. Additional inquiry is necessary to examine the variables that contribute to this heightened risk.

CONCLUSIONS:

The present study shows that most patients with heart failure had a medium level of self-care and resilience. There is a negative relationship between self-care and resilience in term of self-care maintenance, symptom perception, and self-care management. There is a need for educational training workshops to improve the resilience and self-care of patients with heart failure. Heart failure-related mortalities were avoided by the patients' degree of resilience and self-care. The present study suggests conducting further research in the domain of heart failure resilience and self-care adherence, with a particular focus on implementing individualized educational interventions such as educational packages, booklets, or videos for each patient. The present findings show that patient characteristics significantly affect the resilience and self-care of those with heart failure. It is essential that the basis of the subject matter is on robustness.

Ethical Considerations

Compliance with ethical guidelines

The researcher, first, obtained an approval from the Research Ethics Committee of the Iran University of Medical Sciences (#IR.IUMS.REC.1402.560) and received a letter of recommendation from the dean of faculty and university. He submitted the letter of recommendation and proposal summary to the hospital in Dhi-Qar/Al-Nasiriyah in Iraq and gained permission for the research. The researcher explained the objectives of study and gained permission from the research population to do the sampling.

Funding

None

Authors' contributions

All authors were involved in the process of designing, and analyzing the study. All authors read and approved the final manuscript.

Conflict of Interest

None to declare

Acknowledgments

This manuscript was prepared with the help of the Department of Medical Surgical, School of Nursing and Midwifery, Iran University of Medical Sciences. The authors would like to express their special gratitude to authorities of hospitals in Iraq, whose cooperation was praiseworthy. It was deemed impossible to conduct the present study without their help.

REFERENCES:

Abshire Saylor, M., Benjasirisan, C., Kruahong, S., Lim, A., Gill, J., Szanton, S. L., & Koirala, B. (2023). A Contemporary Review of Psychosocial Resilience in Heart Failure Using the Society to Cells Resilience Theory. *Current Geriatrics Reports*, 12(4), 176-194. https://doi.org/10.1007/s13670-023-00398-0.

Al Ali, N., & Al Ramamneh, I. S. (2022). Resilience of patients with coronary heart diseases in Jordan: A cross-sectional study. *International Journal of Nursing Sciences*, 9(1), 86-91.

https://doi.org/https://doi.org/10.1016/j.ijnss.2021.12.003.

Albert, N. M. (2016). A systematic review of transitional-care strategies to reduce rehospitalizations in patients with heart failure. *Heart & Lung*, 45(2), 100-113. https://doi.org/https://doi.org/10.1016/j.hrtlng.2015.12.001.

Asadi, P., Ahmadi, S., Abdi, A., Shareef, O. H., Mohamadyari, T., & Miri, J. (2019). Relationship between self-care behaviors and quality of life in patients with heart failure. *Heliyon*, 5(9).

Azad, N., & Lemay, G. (2014). Management of chronic heart failure in the older population. *J Geriatr Cardiol*, 11(4), 329-337. https://doi.org/10.11909/j.issn.1671-5411.2014.04.008.

Bidwell, J. T., Higgins, M. K., Reilly, C. M., Clark, P. C., & Dunbar, S. B. (2018). Shared heart failure knowledge and self-care outcomes in patient-caregiver dyads. *Heart & Lung*, 47(1), 32-39. https://doi.org/https://doi.org/10.1016/j.hrtlng.2017.11.001.

Boell, J. E. W., Silva, D. M. G. V. d., Guanilo, M. E. E., Hegadoren, K., Meirelles, B. H. S., & Suplici, S. R. (2020). Resilience and self-care in people with diabetes mellitus. *Texto & Contexto-Enfermagem*, 29, e20180105.

Chang, L.-Y., Wu, S.-Y., Chiang, C.-E., & Tsai, P.-S. (2017). Depression and self-care maintenance in patients with heart failure: A moderated mediation model of self-care confidence and resilience. *European Journal of Cardiovascular Nursing*, 16(5), 435-443. https://doi.org/10.1177/1474515116687179.

Chriss, P. M., Sheposh, J., Carlson, B., & Riegel, B. (2004). Predictors of successful heart failure self-care maintenance in the first three months after hospitalization. *Heart & Lung*, 33(6), 345-353. https://doi.org/https://doi.org/10.1016/j.hrtlng.2004.03.004.

Chuang, H.-W., Kao, C.-W., Lin, W.-S., & Chang, Y.-C. (2019). Factors Affecting Self-care Maintenance and Management in Patients With Heart Failure: Testing a Path Model. *Journal of Cardiovascular Nursing*, 34(4), 297-305. https://doi.org/10.1097/jcn.0000000000000575.

Clark, H., Rana, R., Gow, J., Pearson, M., van der Touw, T., & Smart, N. (2022). Hospitalisation costs associated with heart failure with preserved ejection fraction (HFpEF): a systematic review. Heart Failure Reviews, 27(2), 559-572. https://doi.org/10.1007/s10741-021-10097-7.

Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18(2), 76-82. https://doi.org/https://doi.org/10.1002/da.10113.

Gheiasi, S. F., Cheraghi, M. A., Dastjerdi, M., Navid, H., Khoshavi, M., Peyrovi, H., Khachian, A., Seylani, K., Esmaeili, M., & Navab, E. (2023). Experiences of Facilitators and Inhibitors to Treatment Adherence in Patients with Heart Failure. *Clinical Nursing Research*, 32(3), 648-659. https://doi.org/10.1177/10547738221147402.

Harkness, K., Heckman, G. A., Akhtar-Danesh, N., Demers, C., Gunn, E., & McKelvie, R. S. (2014). Cognitive function and self-care management in older patients with heart failure. *European Journal of Cardiovascular Nursing*, 13(3), 277-284. https://doi.org/10.1177/1474515113492603.

Jin, Y., Bhattarai, M., Kuo, W.-c., & Bratzke, Lisa C. (2023). Relationship between resilience and self-care in people with chronic conditions: A systematic review and meta-analysis. *Journal of Clinical Nursing*, 32(9-10), 2041-2055. https://doi.org/https://doi.org/10.1111/jocn.16258.

Kamalinedjad, F., Rafiepoor, A., & Sabet, M. (2020). Relationship between Resilience and Quality of Life in Cardiovascular Patients with the Mediating Role of Lifestyle.

Khachian, A., Seyedoshohadaee, M., Haghani, H., & Aghamohammadi, F. (2016). Family-centered education and self-care behaviors of patients with chronic heart failure.

Khachian, A., Seyedoshohadaei, M., Haghani, H., & Amiri, F. (2020). Effect of self-management program

on outcome of adult knee osteoarthritis. *International Journal of Orthopaedic and Trauma Nursing*, 39, 100797. https://doi.org/https://doi.org/10.1016/j.ijotn.2020.100797.

Kutcher, A., Byon, H. D., & Esquivel, J. (2023). Depression, Anxiety And Resilience: The Association Of Emotions On Self-care In Patients With Heart Failure. *Journal of Cardiac Failure*, 29(4), 560. https://doi.org/https://doi.org/10.1016/j.cardfail.2022.10.035.

Lee, K. S., Jeon, E.-S., Park, J.-H., Jung, M. S., Yun, H., Kong, H. J., & Choi, J.-O. (2022). Symptom detection and the relationship with self-care in heart failure. *European Journal of Cardiovascular Nursing*, 21(8), 821-829. https://doi.org/10.1093/eurjcn/zvac038.

Mei, J., Tian, Y., Chai, X., & Fan, X. (2019). Gender differences in self-care maintenance and its associations among patients with chronic heart failure. *International Journal of Nursing Sciences*, 6(1), 58-64. https://doi.org/https://doi.org/10.1016/j.ijnss.2018.11.008.

Meraz, R., McGee, J., Ke, W., & Osteen, K. (2023). Resilience mediates the effects of self-care activation and hope on medication adherence in heart failure patients. *Research in Nursing & Health*, 46(3), 323-335. https://doi.org/https://doi.org/10.1002/nur.22312.

Mohebi, R., Chen, C., Ibrahim, N. E., McCarthy, C. P., Gaggin, H. K., Singer, D. E., Hyle, E. P., Wasfy, J. H., & Januzzi, J. L. (2022). Cardiovascular Disease Projections in the United States Based on the 2020 Census Estimates. *Journal of the American College of Cardiology*, 80(6), 565-578. https://doi.org/doi:10.1016/j.jacc.2022.05.033.

Movahedimoghadam, F., Naderi, N., Shabani, F., & Fathollahi, M. S. (2022). Effect of Spiritual Care Program on Resilience in Patients with Heart Failure: A Randomized Controlled Clinical Trial. *Iran J Nurs Midwifery Res*, 27(4), 266-273. https://doi.org/10.4103/ijnmr.ijnmr_61_21.

National Institutes of Health. (2023). Heart Health and Aging| National Institute on Aging. https://www.nia.nih.gov/health/heart-health-and-aging.

Navidhamidi, M., Salehi, T., Ranjbar, H., & Alipoor, F. (2019). Relationship of marital satisfaction and self-care behavior in people with [Research]. *Cardiovascular Nursing Journal*, 8(1), 110-119. http://journal.icns.org.ir/article-1-627-en.html.

Pouw, T., de Man-van Ginkel, J., Hardeman, J. A., Mager, J.-J., Trapman, L., Jaarsma, T., & Weldam, S. (2023). The association of resilience with self-care and quality of life in people with chronic obstructive pulmonary disease: A cross-sectional study. *Nursing Open*, 10(12), 7738-7748. https://doi.org/https://doi.org/10.1002/nop2.2015.

Rafei, F., Baghdassarians, A., & Hatami, M. (2020). The Effect of Cognitive- Behavioral Stress Management on Health Locus of Control and Resilience in Patients with Coronary Artery Disease. *Iranian Journal of Health Psychology*, 3(1), 109-120. https://doi.org/10.30473/ijohp.2020.53857.1098.

Reeder, K. M., Ercole, P. M., Peek, G. M., & Smith, C. E. (2015). Symptom perceptions and self-care behaviors in patients who self-manage heart failure. *J Cardiovasc Nurs*, 30(1), E1-7. https://doi.org/10.1097/jcn.0000000000000117.

Regitz-Zagrosek, V. (2020). Sex and Gender Differences in Heart Failure. *Int J Heart Fail*, 2(3), 157-181. https://doi.org/10.36628/ijhf.2020.0004.

Rochal, T., de Figueiredo Netol, J. A., Santosl, E., Pereiral, M., de Deusl, K. M. S., & Mourilhe-Rochall, R. (2022). Association between resilience, depressive symptoms and quality of life in patients with chronic heart failure. *Rev enferm UERJ, Rio de Janeiro*, 30, e65524.

Schultz, M. E., Fronk, G. E., Jaume, N., Magruder, K. P., & Curtin, J. J. (2022). Stressor-elicited smoking and craving during a smoking cessation attempt. *Journal of psychopathology and clinical science*, 131(1), 73.

Seyedoshohadaee, M., Babaeeyan Kshtelee, F., Seyyed Fatemi, N. i., Saravi, M., & Haghani, H. (2018). The

Effect of Self-Care Education on the Resilience of the Patients With Heart Failure [Research]. *Journal of Client-Centered Nursing Care*, 4(3), 165-172. https://doi.org/10.32598/jccnc.4.3.165.

Sisto, A., Vicinanza, F., Campanozzi, L. L., Ricci, G., Tartaglini, D., & Tambone, V. (2019). Towards a Transversal Definition of Psychological Resilience: A Literature Review. *Medicina*, 55(11), 745. https://www.mdpi.com/1648-9144/55/11/745.

Szuba, R. (2023). Self-Care in the Older Adult Living with Heart Disease University of California, San Francisco].

Tawalbeh, L. I., Al Qadire, M., Ahmad, M. M., Aloush, S., Abu Sumaqa, Y., & Halabi, M. (2017). Knowledge and self-care behaviors among patients with heart failure in Jordan. *Research in Nursing & Health*, 40(4), 350-359. https://doi.org/https://doi.org/10.1002/nur.21805.

Toukhsati, S. R., Jovanovic, A., Dehghani, S., Tran, T., Tran, A., & Hare, D. L. (2017). Low psychological resilience is associated with depression in patients with cardiovascular disease. *European Journal of Cardiovascular Nursing*, 16(1), 64-69. https://doi.org/10.1177/1474515116640412.

Tsai, P.-K., Wang, R.-H., Lee, C.-S., Tsai, L.-M., & Chen, H.-M. (2015). Determinants of self-care decision-making in hospitalised patients with heart failure. *Journal of Clinical Nursing*, 24(7-8), 1101-1111. https://doi.org/https://doi.org/10.1111/jocn.12722.

Tung, H.-H., Lin, C.-Y., Chen, K.-Y., Chang, C.-J., Lin, Y.-P., & Chou, C.-H. (2013). Self-Management Intervention to Improve Self-Care and Quality of Life in Heart Failure Patients. *Congestive Heart Failure*, 19(4), E9-E16. https://doi.org/https://doi.org/10.1111/chf.12014.

van Rijn, M. M., Jaarsma, T., de Man-van Ginkel, J. M., & Weldam, S. W. M. (2022). Association Between Self-care and Resilience: A Cross-sectional Study in Heart Failure Patients. *Journal of Cardiovascular Nursing*, 10.1097/JCN.0000000000000908. https://doi.org/10.1097/jcn.0000000000000908.

Vellone, E., De Maria, M., Iovino, P., Barbaranelli, C., Zeffiro, V., Pucciarelli, G., Durante, A., Alvaro, R., & Riegel, B. (2020). The Self-Care of Heart Failure Index version 7.2: Further psychometric testing. *Research in Nursing & Health*, 43(6), 640-650. https://doi.org/https://doi.org/10.1002/nur.22083.

Yao, Z.-F., & Hsieh, S. (2019). Neurocognitive Mechanism of Human Resilience: A Conceptual Framework and Empirical Review. *International Journal of Environmental Research and Public Health*, 16(24), 5123. https://www.mdpi.com/1660-4601/16/24/5123.

TABLES:

Table (1): Demographic and clinical variables of patients with heart failure

Demographic variable		Frequency	Percentage
Age/years	20-29 years	12	**6**
	30-39 years	17	**8.5**
	40-49 years	20	**10.0**
	50-59 years	52	**26.0**
	60 years and more	99	**49.5**
Sex	Male	117	**58.5**
	Female	83	**41.5**
Body Mass Index (BMI)	Normal weight = 18.5 - 24.9	28	**14**
	Overweight= 25 - 29.9	62	**31.0**
	Obese =30 - 34.9	80	**40.0**
	Extremely obese ≥ 35	30	**15.0**
Educational Level	No formal education	30	**15.0**

	Primary	44	**22.0**
	Secondary	86	**43.0**
	High Institute graduate	30	**15.0**
	College	10	**5.0**
Marital Status	Single	27	**13.5**
	Married	134	**67.0**
	Divorced	32	**16.0**
	Widow	**7**	**3.5**

Table (2): Level of self-care of patients with heart failure (N=200)

Self-care domains	Min	Max	Mean	Std. Deviation	0-100			
					min	Max	Mean	Std. Deviation
Self-Care Maintenance	11	31	20.26	4.69	3.33	70.00	34.2	15.63
Self-Care Management	6	22	12.40	3.11	0.00	88.89	35.52	17.25
Symptom Perception	6	19	11.20	2.94	0.00	72.22	28.86	16.32
Total Self-care	29	59	43.85	7.23	10.61	56.06	33.10	10.95

Table (3): Resilience of patients with Heart Failure (N=200)

Resilience Domains	Min	Max	Mean	Std. Deviation	0-100			
					min	Max	Mean	Std. Deviation
Personal Competence (0-32)	11	30	18.52	2.81	34.38	93.75	57.86	8.77
Tolerance of negative affect (0-28)	9	24	15.72	3.17	32.14	85.71	56.14	11.32
Positive acceptance (0-20)	6	18	12.02	2.50	30	90	60.10	12.51
Self-control (0-12)	3	12	7.51	2.15	25	100	62.54	17.88
Spiritual influences (0-8)	2	8	4.53	1.47	25	100	56.63	18.33
Total (0-100)	43	79	58.29	6.86			-	

Table (4): Relationship between resilience and self-care

Resilience		Self-care			
		Self-Care Maintenance	Symptom Perception	Self-Care Management	Self-care
Personal Competence	r	-0.126	-0.229	-0.025	-0.191
	p	0.075	**0.001**	0.725	**0.007**
Tolerance of negative affect	r	-0.233	-0.340	-0.144	-0.356
	p	**0.001**	**<0.001**	**0.042**	**<0.001**
Positive acceptance	r	-0.030	-0.207	-0.171	-0.178
	p	0.673	**0.003**	**0.016**	**0.012**
Self-Control	r	-0.154	-0.270	-0.157	-0.280
	p	**0.029**	**<0.001**	**0.027**	**<0.001**
Spiritual influences	r	0.311	-0.056	-0.078	0.146
	p	**<0.001**	0.430	0.274	**0.039**
Resilience	r	-0.145	-0.367	-0.164	-0.318
	p	**0.041**	**<0.001**	**0.020**	**<0.001**

Table (5): The relationship between self-care and demographic variables of patients with heart failure

Demographic variables		Frequency	Self-care		Results
			Mean	Std. Deviation	
Age/years	20-29 years	12	45.42	8.48	**F=0.855**
	30-39 years	17	43.76	7.28	**P=0.492**
	40-49 years	20	42.10	5.99	
	50-59 years	52	42.92	7.77	
	≥ 60	99	44.52	7.02	
Sex	Male	117	43.40	7.67	**t=1.041 df=198**
	Female	83	44.48	6.55	**P=0.299**
Body Mass Index BMI	Normal weight = 18.5 - 24.9	28	43.61	7.14	**F=0.602**
	Overweight= 25 - 29.9	62	43.81	6.58	**P=0.614**
	Obese =30 - 34.9	80	43.38	7.80	
	Extremely obese= > 35	30	45.43	7.17	
Educational Level	No formal education	30	44.97	6.99	**F=0.899**
	Primary	44	42.27	7.55	**P=0.466**
	Secondary	86	44.16	7.26	
	High Institute graduate	30	43.57	7.61	
	College	10	45.60	4.58	
Marital Status	Single	27	44.26	7.71	**F=3.354**
	Married	134	44.52	7.19	**P=0.02**
	Divorced	32	40.25	6.29	
	Widow	**7**	**45.86**	**6.52**	