



Original Article

Correlation between type D personality and quality of life in heart failure patients



Open Access

Sharareh Zeighami Mohammadi^{1*}, Parvin Farmani², Manijeh Shakoor², Farzad Fahidy³, Ebrahim Fallah Taherpazir³, Behnam Mohseni³

ARTICLE INFO

Article History:

Received 19 February 2018

Revised 13 March 2018

Accepted 13 March 2018

Published online 27 April 2018

Keywords:

Heart failure;

Quality of life;

Type D personality

¹School of Nursing and Midwifery, Islamic Azad University, Karaj Branch, Karaj, Iran;

²Social Security Alborz Hospital, Karaj, Iran;

³Social Security Shahriar Hospital, Tehran, Iran.

Correspondence:

Sharareh Zeighami Mohammadi. School of Nursing and Midwifery, Islamic Azad University, Karaj Branch, Karaj, Iran. Zeighami@kiauo.ac.ir

ABSTRACT

Introduction: The quality of patient's life with heart failure is affected by various physiological, psychosocial factors. This study is conducted to determine the correlation between type D personality and quality of life in heart failure patients.

Methods: A descriptive correlational research design is planned here. Hundred heart failure patients were selected as sample through convenience sampling from two Social Security Hospitals in Karaj during early February 2012 to late December 2013. The Minnesota Living with Heart Failure Questionnaire (MLHFQ) and type-D personality questionnaire were completed in face-to-face interviews. Data was analyzed by SPSS version 18.

Results: Significant correlation were found between type D personality and socioeconomic ($r=0.239$, $P=0.017$), mental ($r=0.408$, $P<0.001$) and total quality of life ($r=0.266$, $P=0.008$).

Conclusion: Type D personality in patients with heart failure is associated with poor quality of life. Screening type D personality in heart failure patients and using appropriate interventions can lead to improve the quality of life.

Introduction

Heart failure is a growing public health problem worldwide (1). Heart failure causes mortality, morbidity and increased health costs in the world (2). 37.7 million people worldwide suffer from heart failure (3). The prevalence of heart failure in Iran is 8% which is more than the reported rate in Asia and world. Heart failure is considered to be as a serious challenge for health system of Iran (4). Despite recent advances in prevention and treatment of heart disease, patients have poor quality of life (1). Quality of life is a multi-dimensional concept that

refers to the patient's direct and indirect experience of health, illness, and disability (5). In heart failure patients, symptom distress, limitation of daily and occupational activities, financial difficulties in financing medical visits, providing drugs and admitting to hospital, cause mental and psychological problems (6). Emotional, functional and physical concerns affect the quality of life of patients with heart failure (7). Recent research indicates the poor quality of life of heart failure patients (6, 8-10). Reduced quality of life, plays an important role in mortality, morbidity and the readmission of heart failure patients (7,11). The quality of life of patients with heart failure is

affected by various physiological, psychosocial factors (7,11-13). Type D personality is a psychological factor which is considered in heart patients (14). Type D Personality has two characteristics of negative emotion and social inhibition. Patients tend to experience negative emotions in different times and situations and they are more likely to feel the distress, anxiety and irritability. These people have a negative attitude about toward themselves and pay more attention to problems. To avoid social interactions and during social interactions, they feel restrained, tensioned and unsafe. They constantly feel depression, chronic stress, anger, pessimism, lack of social support and well-being (15). Characteristics and features of the type D personality are constant over time leading to chronic emotional stress. This is a difference of depression, anxiety that occurs in response to events and live events and varies over time (16). Patients with type D personality are susceptible to mental and physical disorders 31.9% patients with heart failure of type D personality (17). Heart failure is a serious challenge for health care system and improves the quality of life as the most important priority for care and treatment of these patients. Identification of factors associated with quality of life in patients with heart failure can be effective in designing self-care and rehabilitation programs for improving the heart failure patient's quality of life. This study is conducted to determine the correlation between type D personality and quality of life in patients with systolic heart failure.

Methods

This study is based on a descriptive –correlational method. The statistical population of the study include heart failure patients from Alborz Social Security Hospital of Karaj and Social Security Hospital of Shahryar from early February 2012 to late December 2013. Sample size was 100 people (18). In this study, left ventricular ejection fraction was less than 40% which was defined as systolic ventricular failure (19). Participants entered into the study by inclusion criteria (at least having one year of suffering from heart failure, ejection fraction <40%, age > 18 years, the ability to speak Persian language), this study samples have been selected through convenience sampling. The instrument for data collection included three parts. The first part included demographic data including age, gender, marital status, education,

current job and data related to the disease including duration of illness, accompanied disorders, and heart failure severity using the New York Heart Association (NYHA) functional classification system to classify the degree of functional disability based on symptoms (19). The second part included type D personality questionnaire which is contained of 22- items, evaluating depression and anxiety, social constraints, irritability, anger and verbal inhibition based on five Likert scales ranging from "true (4)" to "false (0)". Total scores range from 0 to 88 points and score > 44 indicates type D personality. Concurrent validity with Denollet 14-item type D personality was 0.86 and reliability of the questionnaire ($r = 0.92$) (20). Minnesota Living with Heart Failure Questionnaire (MLHFQ) measure affects heart failure treatments on physical, socioeconomic and mental aspects of life. This 21 question items were answered in a 6-point Likert scale from 0 (no) to 5 (very much). Total score range from 0 (no impairment) to 105 (impairment). The quality of life is declined by a higher score. Total Score is less than 24 (good QOL) score of 24 to 45 (moderate quality of life) and a score greater than 45 (poor quality of life), respectively (21). This Persian version questionnaire has been validated by Eskandari *et al.* (22). Content validity of questionnaires is confirmed by studying scientific references. In the current study test re-test method on 10 heart failure patients with 10-day interval was used to determine the reliability. The reliability coefficients in this study is for type D personality questionnaire ($r=0.81$) and for Minnesota Living with Heart Failure questionnaire ($r=0.76$). Data was collected through face-to-face interviews. The ethical aspect of this study was also includes permission of the hospital officials and approved by the ethics committee of Islamic Azad university, Karaj branch (code: 0051). Explanation aims of research and written informed consent were also obtained from patients. Data was analyzed by SPSS software version 18. Kolmogorov-Smirnov was conducted for testing normality of data distribution ($p>0.05$). Independent sample t-test and ANOVA was used to compare type D personality and MLHF score with demographic characteristics and diseases related variables. Pearson correlation coefficient was used to determine the correlation between type D personality and quality of life. Level of significance in the present study was considered less than 0.05.

Results

The mean (SD) age of participants was 68.56 (10) with a range of 49 to 88 years and more than half of patients were male as 56% and 49% of patients were female in Class (Table 1). Table 2 that shows the mean and

standard deviation of dimension of type D personality and health-related quality of life. Throughout the samples, 75% had type D personality and 81% poor quality of life. Table 3 shows that mean quality of life score was greatly different from Current job ($P=0.020$) NYHA Class ($P=0.027$). Significant correlations were found between type D personality and socioeconomic ($r=0.239$, $P=0.017$), mental ($r=0.408$, $P<0.001$) and total quality of life ($r=0.266$, $P=0.008$) (Table 3). The correlation between type D personality subscales and quality of life dimensions are shown in Table 3.

Discussion

In this study, we found that heart failure patients with type D personality had a lower quality of life. This finding is consistent with results of previous studies (23, 17). In the study of Pelle *et al.* (2008), failure to follow healthy behaviors and inadequate counseling behaviors were observed in patients with personality type D as causes of decrease patients' quality of life (23). Patients with type D personality have little desire to get advice and help from medical team to manage the symptoms of disease. Inadequate management of symptoms led to exacerbate physical problems and, consequently, increased anxiety and depression in relation to the physical condition and decrease the overall quality of the patient's life (24). In this study, heart failure patients with type D personality had lower quality of life in mental dimension. This finding is consistent with results of Pedersen and colleagues' study, and showed type personality D predictor of reduction, emotional dimension of quality of life (17). In Schiffer's study, type D personality predicted increased anxiety and decreased quality of life in patients (25). Another study showed that the type D personality in heart failure patients with decrease functional dysfunction lead to exacerbate depression (26). Failure to do consulting for managing disease leads to increase the severity of the disease and, ultimately, increased anxiety and negative emotion related to health status (24). In this study heart failure patient with type D personality had poor socioeconomic of quality of life. As a result of Staniute and colleagues showed that the verbal inhibition and difficulty in expressing emotions in patients with type D personality causes impaired social interaction and reduce the perceived social support (916). Based on the results Chung and colleagues reduce the perceived social support in heart failure patients relate to exacerbate depression and reduced quality of life (27). Another study showed that

the reduction in medication adherence in quality of life (28).

Table 1. Demographic characteristics and data related to the disease in heart failure patients

Variable	Categories	No.(%)
Age (years)	Less than 60	19 (19)
	61-70	44 (44)
	71-80	20 (20)
	More than 81	17 (17)
Gender	Male	56 (56)
	Female	44 (44)
Marital status	Married	71 (71)
	Divorced and widow or widower	29 (29)
Education	Illiterate	53 (53)
	Primary school	37 (37)
	Secondary school and higher	10 (10)
Current job	Employed	9 (9)
	Unemployed	23 (23)
	Retired	32 (32)
	Housewife	36 (36)
Number of accompanied disorders	1	19 (19)
	2	45 (45)
	3	26 (26)
	≥ 4	10 (10)
Heart failure severity by NYHA Class	Class II	39 (39)
	Class III	49 (49)
	Class IV	12 (12)

Table 2. The mean and standard deviation of type D personality and health-related quality of life in patients with heart failure

Variable	Dimensions	Mean \pm SD	
Type D personality	Negative affective	Depression & anxiety	18 \pm 5.7
		Irritable	10.8 \pm 2.6
		Anger	7.4 \pm 2.4
		Total score	36.33 \pm 9.11
	Social inhibition	Social limitation	12.3 \pm 5
		Verbal preventions	4.4 \pm 1.9
		Total score	16.80 \pm 6.41
		Total score	53.27 \pm 13.92
		Emotional dimension	13.95 \pm 3.79
		Socioeconomic dimension score	21.48 \pm 3.35
Health-related quality of life (MLHFQ)	Physical dimension score	19.38 \pm 6.74	
	Overall Quality of Life score	55.75 \pm 11.09	

Table 3. Comparison of the mean score of type D personality and health-related quality of life with regards to general characteristics

Variable	Categories	Type D personality Mean±SD	p-value	Health-related quality of life Mean±SD	p-value
Age(years)	< 60	55.05±11.69	0.894 ^a	57.58±11.17	0.281 ^a
	61-70	53.11±14.70		53.89±11.43	
	71-80	53.50±15.99		54.90±9.22	
	>81	51.41±12.42		59.53±11.78	
Gender	Male	52.33±13.63	0.454 ^b	56.61±10.81	0.386 ^b
	Female	54.45±14.36		54.66±11.47	
Marital status	Married	52.61±14.40	0.468 ^b	55.30±11.09	0.524 ^b
	Divorced and widow or widower	54.86±12.78		56.86±11.20	
Education	Illiterate	53.15±14.93	0.787 ^a	56.04±12.64	0.089 ^a
	Primary school	54.13±12.83		53.59±9.09	
	Secondary school and higher	50.70±13.25		62.20±5.78	
Current job	Employed	49.77±15.57	0.584 ^a	55.11±6.21	0.020 ^a
	Unemployed	55±12.87		61.87±10.01	
	Retired	51.31±13.07		54.66±11.56	
	Housewife	54.77±15.05		52.97±11.13	
Number of accompanied disorders	1	53.15±15.07	0.891 ^a	57±11.34	0.622 ^a
	2	54.13±14.55		54.38±12.30	
	3	51.50±12.03		55.96±10.05	
	≥4	54.20±15.06		59±7.11	
Heart failure severity by NYHA Class	Class II	53.20±12.13	0.867 ^a	52.10±10.07	0.027 ^a
	Class III	52.83±15.46		58.37±10.94	
	Class IV	55.25±13.71		56.92±12.45	

^aANOVA

^bT.Test

Table 4. Pearson correlation between type D personality and quality of life in heart failure patients

Variables			Quality of life			
			Physical Dimension of QOL	Socioeconomic Dimension of QOL	Mental Dimension of QOL	Total score Quality of life
Type D personality	Sub scales	Depression & anxiety	r=0.054	r=0.115	r=0.424**	r=0.219*
		Irritability	r=0.013	r=0.202*	r=0.305**	r=0.162
		Anger	r=0.040	r=0.214*	r=0.313*	r=0.202*
		Social constraints	r=0.048	r=0.177	r=0.274*	r=0.163
		Verbal inhibition	r=0.236*	r=0.299*	r=0.376*	r=0.372**
Total score type D personality		r=0.089	r=0.239*	r=0.408**	r=0.266*	

*P value<0.05

**P value<0.001

In this study, two-third of heart failure patients were from type D personality group which had a higher rank than in other studies (29, 17). In a study by Pedersen and colleagues, 31.9% of heart failure patients had type D personality (17). In another study, type D personality was reported in 46.6% of patients with cardiovascular disease (30). It seems that difference in findings may be related to differences in demographic study population, using different questionnaire with a different cutoff point. In this study, most patients with heart failure had poor quality of life. This finding was consistent with results of previous studies and showed that patients with heart failure had low quality of life (10, 8, 6). Chronic and debilitating nature of the disease, financial difficulty for hospitalization and medical treatment of heart failure, Impairment of daily activities, dependence on others and loss of independence for self-care activities, Sexual problems and impaired social and occupational tasks, are causes of poor quality of life in patients with heart failure (6).

Conclusions

The result of this study showed that type D personality is associated with poor mental and socioeconomic aspects of life quality. Observing type D personality in heart failure patients and using appropriate intervention can lead to improve the quality of life. The limitation of this study was non-random sampling and small sample size that reduce generalizability of this study results. It is suggested that other studies with sufficient sample size and random sampling can be performed for further generalization of the data.

Ethical disclosure

This research approved by the Ethics Committee of Islamic Azad University, Karaj branch (code:0051). Explain aims of research for patients. Informed consent was obtained from patients in this study.

Acknowledgements

Hereby, we extend our gratitude to the Deputy of Research at Islamic Azad University of Karaj for the financial support of this study. The authors thank all Patients participating in this study.

Authors' contribution

Design (Sh. Zeighami mohammad , F. Fahidi, M. Shakoor, P. Farmani, Ebrahim Fallah taherpazir, Behnam Mohseni), Data collection (M, Shakoor, E Fallah), Data analysis (Sh. Zeighami Mohammadi), Manuscript writing (Sh. Zeighami Mohammadi).

Conflict of interest

Authors have no conflict of interests.

Funding/Support

This study was a part of results of the research project approved by Ministry of Research of Islamic Azad University of Karaj, No. 1.127095 and ethical code 0051. We are grateful to the Research Deputy of the Islamic Azad University of Karaj for approval and financial support for the research project, as well as the patients who help us in this study.

References

1. Savarese G, Lund LH. Global public health burden of heart failure. *Card Fail Rev.* 2017; 3(1):7-11. doi:10.15420/cfr.2016:25:2
2. Lee JH, Lim N-K, Cho M-C, Park H-Y. Epidemiology of heart failure in Korea: present and future. *Korean Circ J.* 2016; 46(5):658-64. doi:10.4070/kcj.2016.46.5.658
3. Ziaeiian, B Fonarow GC. Epidemiology and aetiology of heart failure. *Nat Rev Cardiol.* 2016; 13, 368-78.
4. Ahmadi A, Soori H, Mobasheri M, Etemad K, Khaledifar A. Heart Failure, the outcomes, Predictive and related factors in Iran. *J Mazandaran Univ Med Sci.* 2014; 24 (118):180-8.
5. Travis L, Hardin S, Benton Z, Austin L, Norris L. A nurse-managed population based heart failure clinic: sustaining quality of life. *J Nurs Educ Pract.* 2012; 2(4):1-8. doi: 10.5430/jnep.v2n4p1
6. Zeighami Mohammadi S, Shahparian M. Quality of life (Qol) and some factors related in males with heart failure in Karaj and Shahrar social security hospitals (2010). *J Res Develop Nurs Midwifery.* 2012; 8 (2):1-3.
7. Staniute M, Brozaitiene J, Burkauskas J, Kazukauskienė N, Mickuviene N, Bunevicius R. Type D personality, mental distress, social support and health-related quality of life in coronary artery disease patients with heart failure: a longitudinal observational study. *Health Qual Life Out.* 2015; 22; 13:1. doi: 10.1186/s12955-014-0204-2
8. Abedi HA, Yasaman-Alipour M, Abdeyazdan G. Quality of Life in heart failure patients referred to the Kerman outpatient centers, 2010. *J Shahrekord Univ Med Sci.* 2011; 13 (5):55-63.
9. Yousefi P, Sabzevari S, Alizadeh SM, Haghdoost A. Study of quality of life in heart failure hospitalized patients in Kerman medical university hospital in 2008. *Iranian J Nurs Res.* 2011; 6 (21):59-67.
10. Eskandari S, Heravi-Karimooi M, Rejeh N, Ebadi A, Taheri Kharamah Z, Montazeri A. Quality of life in heart failure patients using the Minnesota Living with Heart Failure Questionnaire (MLHF). *Payesh.* 2016; 15(5): 559-66.
11. Wu J-R, Lennie TA, Frazier SK, Moser DK. Health-related quality of Life, functional status and cardiac event-free survival in patients with heart failure. *J*

- Cardiovasc Nurs. 2016; 31(3):236-44. doi:10.1097/JCN.0000000000000248
12. Nasiry Zarrin Ghabaee D, Saber Moghadam Ranjbar M, Bagheri Nesami M, Haresabadi M. Relationship between mental health and quality of life in patients with heart failure. *Iranian J Rehabilitation Res.* 2015; 1 (4):21-30. doi: 10.21859/ijrn-04025
 13. Heidarzadeh M, Hasani P, Rahimzadeh A, Ghahramanian A, Kolahdouzi Pour J, Yousefi I. Quality of life and social support in congestive heart failure patients and healthy people. *J Holist Nurs Midwifery.* 2013; 23 (1):13-21.
 14. Svansdottir E, Van Den Broek KC, Karlsson HD, Gudnason T, Denollet J. Type D personality is associated with impaired psychological status and unhealthy lifestyle in Icelandic cardiac patients: a cross-sectional study. *BMC Public Health.* 2012; 12(1): 42. doi: 10.1186/1471-2458-12-42.
 15. Zeighami Mohammadi S, Danesh E, Farmani P, Shakoor M, Fahidy F, Mohseni B ,et al . Correlation between type D personality and adherence to low-sodium diet in patients with systolic heart failure. *Qom Uni Med Sci J.* 2017; 11 (4):32-42.
 16. Tziallas D, Kostapanos MS, Skapinakis P, Milionis HJ, Athanasiou T, Elisaf MS, et al. The association between Type D personality and the metabolic syndrome: a cross-sectional study in a University-based outpatient lipid clinic. *BMC Res Notes.* 2011; 4(1):105. doi: 10.1186/1756-0500-4-105
 17. Pedersen SS, Herrmann-Lingen C, De Jonge P, Scherer M. Type D personality is a predictor of poor emotional quality of life in primary care heart failure patients independent of depressive symptoms and New York Heart Association functional class. *J Behav Med.* 2010; 33(1):72-80.
 18. Brace N, Kemp R, Snelger R. *Spss for psychologist: a guide to data analysis using SPSS for windows.* Palgrave Macmillan; London; 3 ed. 2007.
 19. Piepoli MF, Hoes AW, Agewall S, Agewall S, Albus C, Brotons C, et al. 2016 European guidelines on cardiovascular disease prevention in clinical practice: the sixth joint task force of the european society of cardiology and other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts) developed with the special contribution of the european association for cardiovascular prevention & rehabilitation (EACPR). *Eur Heart J.* 2016; 37(29):2315-81. doi: 10.1093/eurheartj/ehw106
 20. Ahmadpour AR, Ahadi H, Mazaheri MM, Nafissi GH. Construction and scale validation for evaluating type D personality and a study of its relationship to the coronary heart disease. *Knowledge Res Appl Psychol.* 2007; 9(32):37-60.
 21. Behloul H, Feldman DE, Ducharme A, Frenette M, Giannetti N, Grondin F, et al. Identifying relative cut-off scores with neural networks for interpretation of the Minnesota Living with Heart Failure questionnaire. *Conf Proc IEEE Eng Med Biol Soc.* 2009;2009:6242-6. doi:10.1109/IEMBS.2009.5334659
 22. Eskandari S, Heravi-Karimooi M, Rejeh N, Ebadi A, Montazeri A. Translation and validation study of the Iranian version of minnesota living with heart failure questionnaire. *Payesh J.* 2015; 14 (4):475 - 84.
 23. Pelle AJ, Schiffer AA, Smith OR, Widdershoven JW, Denollet J. Inadequate consultation behavior modulates the relationship between type D personality and impaired health status in chronic heart failure. *Int J Cardiol.* 2010; 142(1):65-71. doi:10.1016/j.ijcard.2008.12.086
 24. Schiffer AA, Denollet J, Widdershoven JW, Hendriks EH, Smith OR. Failure to consult for symptoms of heart failure in patients with a type-D personality. *Heart.* 2007; 93(7):814-8. doi:10.1136/hrt.2006.102822
 25. Schiffer AA, Pedersen SS, Broers H, Widdershoven JW, Denollet J. Type-D personality but not depression predicts severity of anxiety in heart failure patients at 1-year follow-up. *J Affect Disord.* 2008; 106(1-2):73-81.
 26. Schiffer AA, Pedersen SS, Widdershoven JW, Hendriks EH, Winter JB, Denollet J. The distressed (type D) personality is independently associated with impaired health status and increased depressive symptoms in chronic heart failure. *Eur J Cardiovasc Prev Rehabil.* 2005; 12(4):341-6.
 27. Chung ML, Mosor DK, Lennie TA, Frazier SK. Perceived social support predicted quality of life in patients with heart failure, but the effect is mediated by depressive symptoms. *Qual Life Res.* 2013; 22(7):1555-63.
 28. Wu J-R, Moser DK. Type D personality predicts poor medication adherence in patients with heart failure in the USA. *Int J Behav Med.* 2014; 21(5):833-42.
 29. Mommersteeg PM, Pelle AJ, Ramakers C, Szabo BM, Denollet J, Kupper N. Type D personality and course of health status over 18 months in outpatients with heart failure: multiple mediating inflammatory biomarkers. *Brain Behav Immun.* 2012; 26(2):301-10.
 30. Oginska-Bulik N. Type D personality and quality of life in subjects after myocardial infarction. *Kardiol Pol.* 2014; 72(7):624-30.