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Patient experiences of living with coronary stent

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Cardiovascular disease is among the most important disorders in the developed world and the main cause of death and disability in all countries considered. Using coronary stent in cardiovascular patients, as an effective treatment, has greatly reduced the requirement for cardiac surgery. The study was carried out to explore lived experiences of patients living with coronary stents.The qualitative phenomenological study was performed to explore lived experiences of patient with coronary stent. The participants (11 patients) were selected purposively. Data were collected through individual semistructured in-depth interviews. The interviews were analyzed according to Colaizzi's seven-stage method. Authenticity is demonstrated using Lincoln and Guba's 4 criteria. The mean age of participant was 49.6 ± 11 years. The researcher obtained as many as 577 codes from patients' statements, and by merging or removing duplicated codes, they were decreased to 217 codes. The analysis of data collected on the cardiovascular patients living with stents showed some basic issues such as concern about future and social anxiety, which constitute the basic theme of anxiety. Basic issues such as lack of knowledge and supporting needs led to the major theme of feeling of necessity, and major issues such as body deformation and lifestyle change resulted in major theme of change. In conclusion, the result showed that an important step to fixing the problems is reducing concerns, increasing the level of awareness, and satisfying the needs (physical and mental). For improving patient's health, the rehab and care programs may modify patients' problems. (J Vasc Nurs 2018;36:181-185)

Ischemic heart disease remains among the leading causes of mortality around the globe.[1] Cardiovascular disease (CVD) accounts for approximately 800,000 deaths in the United States (US) or one out of every three deaths. Among Americans, an average of one person dies from CVD every 40 seconds. Coronary heart disease accounts for the majority of CVD deaths, followed by stroke and heart failure. More than 90 million Americans carry a diagnosis of CVD, and over 45% of non-Hispanic blacks live with CVD in the US.[2] Coronary artery disease is responsible for one-third of deaths of people over 35 years of age in developing and developed countries, with the percentage reaching close to 50% (according to some estimates) in western countries.[3] In the US, the hospital utilization expenditures associated with managing and treating coronary artery disease was estimated at $100.00 billion or greater per year,[4] and in another study, the direct and indirect costs summed to $207.3 billion.[5] Inflammation and fibrosis play an important role in the development and progression of CVDs. Acute coronary syndrome is caused by rupture of inflamed atherosclerotic plaque and subsequent atherothrombosis.[6] Atherosclerosis is a process that causes coronary artery constriction. Its underlying causes are unclear, but the risk factors have been identified and could play an important role in containing the disease via control and management.[7] Studies showed that approximately 70% of patients with acute myocardial infarction had coronary artery stenosis and <50% before myocardial infarction onset, suggesting that myocardial infarction is caused by rupture of a plaque that has expanded toward the adventitia, the so-called positive vascular remodeling, with subsequent thrombus formation and abrupt coronary artery occlusion, leading to the establishment of the concept of acute coronary syndrome.[6] These lesions, if unstable or clinically significant, are frequently treated with percutaneous coronary intervention (PCI), which usually involves balloon angioplasty and stent implantation.[7] PCI directed at severely stenotic lesions are highly effective in relieving angina.[8] PCI is one of the commonest procedures performed in contemporary clinical practice, with more than 1400 procedures/million carried out every year in the UK,[9] and there was about 1 million PCI in US in 2010 with stenting or other procedures.[10] Stenting is a treatment for coronary artery stenosis. Stent is a synthetic mesh tube made of metal which has application in the normal conduit (lumen) of coronary arteries, to deal with coronary artery disease or keep the coronary artery open.[11] Today, angioplasty has the most applicants compared with coronary bypass surgery due to a short stay in the hospital and fewer complications after stenting.[12] The research conducted in the US show that in 2002,

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one million and four hundred thousand people were treated through catheterization of which 650,000 underwent angioplasty and stenting.[13] People who underwent angioplasty and myocardial infarction experienced a feeling of depression because of the change in their identity. Health threat in the form of a feeling of death and its reflection as a subjective concept of heart disease are other experiences of these patients. Concerns about complications after angioplasty and living with heart disease affect the process of adapting lifestyle changes.[14,15] To have a healthy lifestyle is a psychophysical perception, which is diverse in different people and cultures. Explaining the experiences of people would be a good way to better understand their illness and physical and psychological problems.[16] On the other hand, a systematic and subjective approach, namely "qualitative research," can be used to describe, understand, and give meaning to their lived experiences. This method has received promising emotional responses for the study of the human experiences compared with quantitative research methods.[17] One way of doing qualitative research is using the phenomenological method. Phenomenology is essentially the study of lived experience. Phenomenology explains the world as it is lived by an individual. The main purpose of phenomenological study is to create a comprehensive description of a phenomenon experienced to gain understanding of its inherent structure.[18] This study aimed to describe the experiences of patients with cardiac stenting through the phenomenological method.

MATERIALS AND METHODS

This study is a qualitative research conducted using the phenomenological method. According to the study, purposive sampling was used to gather information and rich experiences of the participants. Participants in this study were 11 people who were selected among heart patients who had passed from their stenting more than 1 year ago. Semistructured in-depth interviews were used for data collection. Furthermore, open questions were used for data collection, and participants' experience about living with stents and significant related beliefs without restrictions in definition or reservation were obtained through their own words and vocabulary. After obtaining the trust and confidence of the participants about confidentiality and research ethics, face-to-face interviews were carried out in a suitable place based on the participants' discretion, that is, rehabilitation ward of the hospital. Data collection was continued until data saturation. Colaizzi seven-step method was used to analyze the interviews.[18] First, the recorded statements of participants were repeatedly listened, and transcripts were prepared accordingly. Interviews were studied several times to understand the experiences of the participants. Then, certain important terms were determined and concepts were extracted. After specifying the key phrases of each interview, every important concept that expressed the meaning of each phrase and the individual's thinking was extracted. After specifying the codes, extracted concepts were studied carefully and were classified based on similarity of concepts. General categories were created after continuous review of categories and combining them. Based on class, a comprehensive description of the phenomenon under study was presented clearly and unequivocally. Finally, referring to each participant, the researcher's questions were expressed about the findings, and the original themes were extracted.[19] The four criteria by Guba and Lincoln (1994)[20] were taken into consideration at all stages. To gain credibility for the study, allocation of sufficient time while maintaining a close relationship with participants, indulging in the field of research, accurate selection of subjects, frequent interaction with the participants, long-term involvement, continuous observation, controlling codes, and classes were practiced by qualified personnel. To ensure transferability, the researcher strived to select diverse participants in terms of age, gender, education, and cultural background. The researchers also reported the results of processes and precisely mentioned the details to enable reusability of data in subsequent studies. To ensure validity, the code and data with selected excerpts from the content of the interviews were submitted to related experts to extract meanings and suggest answers and recommendations in the final written version. Furthermore, in this study, a detailed description was provided on how data collection and analysis was for the process to be auditable by outside observers. To increase reliability before the commencement of the study, the researcher determined his personal ideas, perceptions, and thoughts about the topic and noted them in a notebook based on the points raised by experts' phenomenological study for better awareness of personal thoughts and beliefs on the subject and to eliminate judgments that may occur during data collection and analysis via the personal belief system and not on the basis of actual data. This was repeated during the data collection and analysis.

RESULTS

In this qualitative study, a deep semistructured interview was conducted among 11 patients hospitalized in Shahid Madani Hospital of Khorramabad City. The mean age of patients participating in the study was 49.6 years, and their age range was 41 to 62. Nine participants were male, and 2 participants were female. Regarding marital status, 10 participants were married, and 1 was single. The mean duration of stenting in these patients was 3.4 years with a range of 1 year to 8 years. Duration of interview for each patient was approximately 25 to 60 minutes, with a mean of 40 minutes. After the analysis of data collected on the cardiovascular patients living with stent, 577 codes were obtained from patients' statements, which, by merging the same codes or removing duplicated ones, were eventually reduced to 217 codes. Twelve subthemes and 6 themes were obtained in 3 main themes (Table 1). The result showed some basic issues such as concern about future and social anxiety, which constitute the basic theme of anxiety. Basic issues namely lack of knowledge and supporting needs led to the major theme of feeling of necessity, and major issues such as body deformation and lifestyle change resulted in major theme of change.

Anxiety

Anxiety of the consequences of stenting and anxiety of social interactions were the 2 main contents related to the main theme of anxiety.

Anxiety of the consequences of stenting. The participants raised coronary artery restenosis as a factor of anxiety. Fear of recurrence was observed in the majority of participants so that they stated it as a mental conflict. The possibility of clogging in stents and stent lifetime was stated as a cause of anxiety and fear of the future in these patients. One of the participants said,

TABLE 1

THEMES AND MAIN CONTENTS OF THE CARDIOVASCULAR PATIENTS' PERCEPTION AND EXPERIENCES FROM LIVING WITH A CORONARY STENT

Main Themes	*Themes*	*Subthemes*
Anxiety	Anxiety of the consequences of stenting	Anxiety of the occurrence of a problem from stenting
		Anxiety of disease outcome
	Concern for social interactions	Anxiety of being accepted
		Impairment in functioning
Feeling of necessity	Lack of knowledge	Lack of awareness of the nature of the stent
		Lack of awareness in sexual relations
	Supportive needs	Emotional support
		Economic support
Changes	Physical changes	Physical problems
		Improvement
	Lifestyle changes	Change of attitudes
		Change of diet

"The reason of my anxiety is to what extent can the stent prevent heart disease and restenosis, and no one exactly knows that!" (participant: 10, male, age: 46 years). Another participant stated, "But there is a fear in me, there is a difference between me and a man who is at the same age as me but living without a stent. There is also an anxiety in creating problems, and tightness in the stent…"(participant: 6, male, age: 47 years).

Challenges of social interaction. Analysis of the interviews indicated that patients confront problems such as disorder in functioning and the concern of acceptance after stent implantation. Most participants stated that they confronted problems in their relationships in terms of family and social interactions after stenting. The patients stated experiences and emotions in connection with their concern of social interactions as, "I think I am abandoned maybe because my ability in catering and hospitality has reduced, I am not as hospitable as before. My children behave cold …" (participant: 3, female, age: 45 years). "A number of factors are not in my control, such as irritability and sensitivity, but I don't like the people around me to treat me as if I'm disabled …" (participant: 8, female, age: 58 years). "Negligence of heart patients and those who have implanted stents by the society is annoying …" (participant: 9, male, age: 50 years).

The feeling of necessity

One of the other themes of this study was the feeling of necessity that included the 2 main themes of this study as having a role and supportive needs.

Lack of knowledge. The participants stated their lack of awareness of the nature of the stent and their experiences in this field. A number of participants who have experienced stent implants in critical conditions and after myocardial infarction sensed the need for further training about the nature of the stent and what will happen to the stent implanted in their bodies. Some remarks of the participants include, "Everything has a lifetime and I don't know how long the stent will do well for my heart? Another thing, how long will it stay open? …" (participant: 3, female, age: 45 years). "Until deciding to go for the stent implant, I didn't even know what a stent is and what is its material and nature? What is a medicinal stent? …"(participant: 4, male, age: 48 years).

Supportive needs. The participants described their needs in the 2 main themes of emotional support and economic support. A number of participants stated emotional support to be necessary in supporting cardiovascular patients. The patients stated their emotional needs as, "I sometimes cry and wish my husband was not in prison. I really think someone who has undertaken stent implant is so needy of emotional support of others as well as their sympathy" (participant: 3, female, age: 45 years). "In fact, my family has mostly caused my stress. In fact, my stress was due to problems with my wife …" (participant: 1, male, age: 53 years).

The participants stated mental, financial, and economic problems as factors of their anxiety and expressed their statements as follows: "Financial support is low at recovery time and all my savings were spent during this one year and a half, and you bet I would have had more problems in recovery if I didn't have those savings." (participant: 2, male, age: 41 years).

Changes

The last theme of this study was the changes in relation to the main themes of physical changes and lifestyle changes.

Physical. Some patients knew their physical problems as a part of their physical changes, and some others were speaking of their improvement after stenting: "Honestly, my husband is in prison; I wish he was next to me when I was in the works of having the implantation; I was so alone. I had my children, but

my husband wasn't next to me. After stenting, I visited him and told him that I had implanted the stent, and I feel that I have a physical impairment … "(participant: 3, female, age: 45 years). "I am like a broken dish, a cracked dish; although cracked, I still have to work and live …" (participant: 8, female, age: 58 years).

Lifestyle. Lifestyle changes were one of the other main themes related to the main theme of changes. The participants stated central themes of attitude change and diet change in connection with lifestyle changes. The patients expressed their lifestyle changes and changes in their attitude as follows: "… living with stent is an experience that I can say has totally changed my life and personality. I was nervous, aggressive, and irritable. After the surgery, I was told that stress is not good for me, and that is the reason behind my change of personality. Now I have a calm and patient character…" (participant: 2, male, age: 41 years).

Changes in diet were the most important change that the participants stated for their health care after stenting. The patients have described their experiences about diet changes as, "My wife is overweight, after my heart problem and stenting; she also considers my diet in cooking. I should even be careful about my diet in parties and I sometimes have to eat less…" (participant: 10, male, age: 46 years).

DISCUSSION

Anxiety after stenting has been stated as one of the most important mental challenges in this study. It indicated that cardiac stenting is not only a physical change for the patients but also embodies mental conflict and anxiety of the consequences of the disease.

The results of the study indicated that patients confront challenges such as concern after stenting. It was indicated in a study that after defibrillator implant within the heart, which is a tool within the heart, the patients are confronted by anxiety and stress.[21] Brouwer corlin (2015) in his study found that anxiety disorders are one of the problems for the patients having the tool implanted in their heart. Patients who have received counseling, psychotherapy, and support practices had better prognosis on compatibility and reduced mortality in comparison to patients who had not benefited from these practices.[22]

The results of another study indicated that patients who underwent angioplasty had feelings of threat in addition to feelings of vulnerability, fear of death, and recurrence. These patients have also stated angioplasty as a transition point in their lives. This fear of death and recurrence has motivated them to reconsider their life priorities.[23] Depression and anxiety are among the findings that have been pointed out in other relevant studies.[24]

Studies that investigated and discussed the main theme of concern were consistent with this study, in which anxiety was stated as the most important mental challenge of patients after implanting a stent or other tools in the heart.

The sense of need was one of the other main themes of this study, which indicated that patients have different needs after implanting stent. The most important needs stated by patients were the need to be further educated about the nature of the stent and supportive needs in emotional and economic issues. Astin et al (2008) stated in their qualitative study that patients have different needs after stenting, and one of these is the need for care after stenting. Other needs such as living with a stent, confronting the risk of recurrence, and control of anxiety have also been mentioned in this study.[25]

In another study, the participants had different ideas on the training needs after stenting. Some of them expressed that training was adequate and that they were satisfied with their training while others needed more. Of course, individual training needs were different depending on their culture and social class.[26] The results of another study indicated that patients who underwent stent implantation need to be realistic about their disease, and this change of attitude in accepting changes after stenting was very effective.[22] Wingam (2006) et al also found that the training needs of patients undergoing cardiac rehab were different during treatment. Taking into account the patients' needs and determining priorities by the rehabilitation team was very important. Rehabilitation and visiting of homes greatly reduced the educational needs of patients.[27]

The last theme derived from the results of this study was the changes. The changes were described as physical and lifestyle changes, and the patients expressed the most significant changes in physical and attitudinal aspects. Astin (2008) et al concluded that embedding tools within the heart creates many changes in one's life, and these changes are in psychological, social, and physical areas.[25] Charlson (2007) found that after installing the vascular tools in these patients, they could succeed in changing their lifestyle when they accepted it as an important factor in preventing the recurrence of their heart disease. They also stated social support as a very important issue in this regard.[28] Many patients had physical inferiority after coronary stent placement. Feeling of reduced physical ability caused mental and psychological problems in these patients. With the help of rehab and over time, the physical and mental capacity of these patients improved.[29] As can be observed, patients who have experienced stenting have confronted changes in lifestyle, but their change of lifestyle was associated with physical and psychological needs as well as family support, so that patients have stated the lack of social support as a concern after being discharged.[30]

CONCLUSION

The obtained results of the experiences by patients, who had implanted stents, identified the three main themes namely anxiety, feeling of necessity, and changes. It can be concluded that anxiety, which was the most important concern of the patients, is adjustable by caring and rehabilitation plans after discharge, so that patients experience less mental concern and anxiety after stenting. The participants' experiences, concerns, needs, and changes after stenting were well described, and this could be a good guide for improving care and treatment plans for patients who undergo stent implants. According to the experiences of patients about living with a stent, their psychological needs in all care plans during hospitalization and after discharge are expected to be considered alongside their physical well-being.

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REFERENCES

1. Finegold JA, Asaria P, Francis DP. Mortality from ischaemic heart disease by country, region, and age: statistics from World Health Organisation and United Nations. Int J Cardiol 2013;168(2):934-45.
2. Benjamin EJ, Blaha MJ, Chiuve SE, et al. Heart Disease and Stroke Statistics-2017 Update: A Report From the American Heart Association. Circulation 2017;135(10):e146-603.
3. Kandaswamy E, Zuo L. Recent advances in treatment of coronary artery disease: role of science and technology. Int J Mol Sci 2018;19(2).
4. Sanchis-Gomar F, Perez-Quilis C, Leischik R, et al. Epidemiology of coronary heart disease and acute coronary syndrome. Ann Transl Med 2016;4(13):256.
5. Pfuntner A, Wier LM, Steiner C. Costs for Hospital Stays in the United States, 2011: Statistical Brief #168. Healthcare Cost and Utilization Project (HCUP) Statistical Briefs. Rockville (MD): Agency for Healthcare Research and Quality (US); 2006.
6. Anzai T. Inflammatory mechanisms of cardiovascular remodeling. Circ J 2018;82(3):629-35.
7. Nichols M, Townsend N, Scarborough P, et al. Cardiovascular disease in Europe: epidemiological update. European Heart J 2013;34(39):3028-34.
8. Kiran U, Makhija N. Patient with recent coronary artery stent requiring major non cardiac surgery. Indian J Anaesth 2009; 53(5):582-91.
9. Iqbal J, Gunn J, Serruys PW. Coronary stents: historical development, current status and future directions. British medical bulletin 2013;106:193-211.
10. Epstein AJ, Polsky D, Yang F, et al. Coronary revascularization trends in the United States, 2001-2008. JAMA 2011; 305(17):1769-76.
11. Petit CJ, Gillespie MJ, Harris MA, et al. Relief of branch pulmonary artery stenosis reduces pulmonary valve insufficiency in a swine model. J Thorac Cardiovasc Surg 2009; 138(2):382-9.
12. Shakeri J, Jaberghaderi N, Rezaei M, et al. Psychosocial risk factors in patients with cardio-vascular diseases in Kermanshah (2006). J Kermanshah Univ Med Sci 2012;16(3):246-54.
13. Azizi F, Ghanbarian A, Momenan AA, et al. Prevention of non-communicable disease in a population in nutrition transition: Tehran Lipid and Glucose Study phase II. Trials 2009;10(1):5.
14. Astin F, Horrocks J, Closs SJ. Managing lifestyle change to reduce coronary risk: a synthesis of qualitative research on peoples' experiences. BMC cardiovascular disorders 2014;14(1):96.
15. Hasankhani H, Gholizadeh L, Mohammadi E, et al. The lived experiences of patients post coronary angioplasty: a qualitative study. J Vasc Nurs 2014;32(4):144-50.
16. Ma L, Li Y, Feng M. Positive emotion and cardiovascular disease in elderly people. Int J Clin Exp Med 2015;8(5):6682.
17. Speziale HS, Streubert HJ, Carpenter DR. Qualitative Research in Nursing: Advancing the Humanistic Imperative. 5th edition. Philadelphia, PA, London: Lippincott Williams & Wilkins; 2011.
18. Polit DF, Beck CT. Essentials of Nursing Research: Appraising Evidence for Nursing Practice. 7th edition. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2010.
19. Corbin J, Strauss A. Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. 3rd edition. Thousand Oaks, CA: Sage; 2008.
20. Lincoln YS, Lynham SA, Guba EG. Paradigmatic controversies, contradictions, and emerging confluences, revisited. Sage Handbook of Qual Res 2011;4:97-128.
21. Sposato LA, Cipriano LE, Saposnik G, et al. Diagnosis of atrial fibrillation after stroke and transient ischaemic attack: a systematic review and meta-analysis. Lancet Neurol 2015; 14(4):377-87.
22. Brouwers C, Denollet J, Caliskan K, et al. Psychological distress in patients with a left ventricular assist device and their partners: An exploratory study. Eur J Cardiovasc Nursing 2015;14(1):53-62.
23. Peterson JC, Allegrante JP, Pirraglia PA, et al. Living with heart disease after angioplasty: a qualitative study of patients who have been successful or unsuccessful in multiple behavior change. Heart Lung 2010;39(2):105-15.
24. Vazquez LD, Conti JB, Sears SF. Female-specific education, management for implantable cardioverter defibrillator patients: the FEMALE-ICD study. Pacing Clin Electrophysiol 2010;33(9):1131-40.
25. Astin F, Closs SJ, McLenachan J, et al. The information needs of patients treated with primary angioplasty for heart attack: an exploratory study. Patient Educ Counsel 2008; 73(2):325-32.
26. Oterhals K, Hanestad BR, Eide GE, et al. The relationship between in-hospital information and patient satisfaction after acute myocardial infarction. Eur J Cardiovasc Nursing 2006; 5(4):303-10.
27. Wingham J, Dalal HM, Sweeney KG, et al. Listening to patients: choice in cardiac rehabilitation. Eur J Cardiovasc Nursing 2006;5(4):289-94.
28. Charlson M, Peterson J, Boutin-Foster C, et al. Changing health behaviors to improve health outcomes after angioplasty: a randomized trial of net present value versus future value risk communication. Health Educ Res 2007;23(5):826-39.
29. Darvishpour A, Javadi Pashaki N, Salari A, et al. Comparing the quality of life in patients with cardiovascular diseases before and after coronary angioplasty. J Mazandaran Univ Med Sci 2016;26(137):206-10.
30. Page M, Jackman K, Snowden P. The experiences of patients undergoing percutaneous transluminal coronary angioplasty: a qualitative exploration. World Critic Care Nursing 2008; 6(4).