

Original Article

Care Needs in the Phase I of Cardiac Rehabilitation: A Hybrid Concept Analysis

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ABSTRACT

Background: Care quality improvement necessitates the identification and fulfillment of patients' care needs. Yet, there is no comprehensive information about the care needs of patients with coronary artery disease (CAD). **Objectives:** The objective of this study was to analyze the concept of care needs in the Phase I of cardiac rehabilitation (CR). **Methods:** This concept analysis was conducted using the three-phase hybrid model. In the first (theoretical) phase, the attributes of care needs were identified through a literature review. In the second (fieldwork) phase, data were collected through semi-structured interviews and were analyzed through directed content analysis to determine the attributes of care needs based on the sociocultural context of Iran. Six patients, five nurses, and one surgeon were purposively recruited from two university hospitals and one private hospital in Ahvaz, Iran. In the third (final analytic) phase, the results of the first and the second phases were integrated, and the final attributes of the concept were identified. **Results:** The first phase revealed that the concept of care needs has three main attributes, namely physical, psychological, and social care needs. Besides confirming these three attributes, the second phase showed that the concept also has another attribute, that is, spiritual care needs. **Conclusion:** The concept of care needs in the Phase I of CR includes the four main dimensions of physical, psychological, social, and spiritual care needs. The findings of this study provide useful information for the careful assessment of care needs among patients with CAD.

KEYWORDS: *Care needs, Concept analysis, Coronary artery disease, Phase I cardiac rehabilitation*

INTRODUCTION

Cardiovascular disease is among the leading causes of morbidity and mortality worldwide.^[1,2] Coronary artery disease (CAD) is the most important type of cardiovascular disease.^[1] CAD is very common among the Iranian population and is responsible for about 50% of deaths in Iran each year.^[3] Studies show that 80% of patients with CAD live in countries with low-to-moderate income.^[4] Although the mortality rate of CAD is decreasing in developed countries, it is increasing in Iran, so that depending on age, it accounts for 20%–50% of all deaths in the country.^[3,5]

CAD causes different physical, psychological, and socioeconomic problems for patients.^[6] Therefore,

patients with CAD need strong professional help and support to manage their symptoms, deal with their CAD-associated problems, and prevent recurrence of heart attack.^[7] Cardiac rehabilitation (CR) is one of the most important nonpharmacological interventions for the management of CAD and its associated symptoms, problems, and complications.^[8]


CR should start immediately after CAD, that is, when the patient is still in hospital.^[9] It includes four main

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phases, namely Phase I or the acute phase, Phase II or the subacute phase, Phase III or the intensive outpatient therapy phase, and Phase IV or the independent ongoing conditioning phase. Studies show that Phase I is the most important phase of CR.^[10] The first step of nursing care in all phases of CR, particularly in the Phase I, is to identify patients' care needs.^[11] However, there are ambiguities about the definition and the scope of the concept of care needs. Moreover, the term "care needs" is sometimes interchangeably used with concepts such as informational needs,^[12] learning needs,^[13] health-care needs,^[14] postdischarge concerns,^[15] and educational needs.^[16] Such interchangeable use of different concepts has added to the ambiguities surrounding the concept of care needs.

Each of the previous studies in the area of CAD-related care needs revealed only some aspects of the concept of care needs in the Phase I of CR, and hence, there is no complete understanding about the different aspects of the concept. Such incomplete understanding has contributed to the provision of incomplete definitions for the concept.^[17] Moreover, the attributes of the concept of care need greatly depend on the immediate sociocultural context, the attributes of the immediate health-care system, and the quality of relationships between health-care providers and receivers. All these factors need to be considered in defining the concept.^[18-23] Therefore, exploring the different aspects of the concept and providing a clear definition for it based on the immediate context are the prerequisites for the effective fulfillment of patients' needs.

Objectives

The main objective of this study was to analyze the concept of care needs in the Phase I of CR to achieve an in-depth understanding about it in the sociocultural context of Iran.

METHODS

This concept analysis was conducted using the hybrid model. The three phases of this model were the theoretical (or literature review) phase, the fieldwork phase, and the final analytic phase.

The theoretical phase: literature review

The aim of this phase was to provide a deep understanding of the concept based on the existing literature. This phase was done using the four steps recommended by Schwartz-Barcott and Kim, namely selecting a concept, searching the literature, dealing with meaning and measurement, and choosing a working definition.^[24] Hence, a literature review was conducted in online databases such as Scopus, CINAHL,

MEDLINE, PubMed, Wiley, Elsevier, IranMedex, and MagIran. Search keywords were "coronary artery disease," "cardiac rehabilitation," "coronary heart disease," "care needs," "postdischarge education," "informational needs," "learning needs," "patient teaching," "self-care needs," and "patient needs." The operator AND was used in coupling the keywords while searching in some databases (i.e., PubMed and Elsevier). Studies were included if they had been conducted using quantitative, from which only 47 articles and four books met inclusion criteria, methodological, mixed method, or systematic review designs and had been published in English or Persian before 2017. Books related to the concept of care needs were also included, qualitative, while articles with no accessible full text were excluded from the study. Initially, documents were analyzed through textual content analysis. Accordingly, each document was read word by word, line by line, and paragraph by paragraph for several times to obtain a general understanding about it. Then, meaning units (i.e., excerpts related to care needs) were extracted and coded. Similar codes were classified into subcategories, then categories, and themes. Subcategories and categories were developed with the highest internal homogeneity and highest external heterogeneity. Trustworthiness of the data was ensured through explicitly expressing the study aim, explaining the search strategy, and examining the appropriateness of the retrieved documents.^[25]

The fieldwork phase: A descriptive qualitative study

This phase consisted of a descriptive qualitative study which aimed to explore care needs in the Phase I of CR. Participants were six patients with CAD, five nurses, and one surgeon, all of whom were purposively recruited from two university hospitals and one private hospital in Ahvaz, Iran. Participants were five males and seven females with an age mean of 45 in the range of 28–68. Patients suffered from acute coronary syndrome or myocardial infarction or had undergone coronary artery bypass graft surgery. Ten participants were married, one was divorced, and one was widowed. Four patients had primary education, and two had associate degrees, while all nurses had bachelor's degree.

In this phase, data were collected, from November 2016 to January 2017, through face-to-face semi-structured interviews. An interview guide was developed based on the results of the theoretical phase. The guide included several broad questions, including "Would you please describe what kind of information you have received since you developed this disease?" "Would you explain the impact of the disease on your sexual activities?" "Would you explain how much physical activity you

can do?” “Do you know when you can do physical activity?” Based on the findings, probing questions were formulated and used during interviews. All interviews were conducted by the first author in private rooms in hospital wards and were audiotaped. Data were saturated at the 9th interview, and data collection was terminated at the 12th interview. Interviews lasted 35 min, on average.

Interview data were manually analyzed through directed content analysis. Initially, we developed a basic matrix based on the results of the theoretical phase and then, read and coded each interview transcript. Primary codes were categorized into subcategories and then into the predetermined categories.^[26]

Trustworthiness was applied based on Lincoln and Guba's four criteria, namely credibility, dependability, confirmability, and transferability. Credibility and dependability were ensured through member checking and peer checking (by coauthors), respectively. Moreover, several external qualitative researchers evaluated the consistency between the raw data and the developed codes and categories. Transferability was also maintained by selecting participants from both genders and different age groups and also through triangulating data.^[27]

Ethical considerations

The approval for this study was obtained from the Ethics Committee of Jundishapur University of Medical Sciences, Ahvaz, Iran (approval code: IR. AJUMS. REC.1394.722). Written informed consent was gotten from all participants in accordance with the principles of the Declaration of Helsinki. All participants were assured of the data confidentiality. Moreover, participation in the study was voluntary and participants could leave the study at will.

RESULTS

Theoretical phase

Reviewed studies reported different aspects of care needs. For instance, a systematic review showed that informational needs of patients with myocardial infarction were related to familiarization with coronary care unit environment, diagnostic procedures, myocardial infarction pathophysiology, visitation of family members and friends, emotional reactions, dietary regimen, medications, risk factors, physical activity restrictions, heart rate monitoring, and follow-up visits.^[28] Another study revealed that educational needs of patients with angina were related to coronary care unit environment, medications, risk factors, dietary regimen, psychological factors, anatomy and physiology, and physical activity.^[29] Some reviewed studies were also on patients who had cardiac surgeries. For instance, a study in Yemen found that after open-heart surgery, patients needed information

about their medications, symptoms, risk factors, dietary regimen, surgical wound care, psychological factors, and physical activity.^[30]

The analysis of the reviewed studies resulted in the development of 570 primary codes, 44 subcategories, 16 categories, and the three main themes of physical, psychological, and social care needs [Table 1].

Working definition

Based on the findings of the theoretical phase and as summarized in Table 1, the concept of care needs in the Phase I of CR is defined as, “information and skills in physical, psychological, and social dimensions to return to healthy and normal life.”

Fieldwork phase

In this phase, 410 primary codes and 16 subcategories were developed and categorized into the three main categories already identified in the theoretical phase as well a new category, that is, spiritual care needs. These four categories are explained in what follows.

Physical care needs

Physical care needs included aspects such as providing patients with information regarding the characteristics of CAD, sexual and physical activities after hospital discharge, postdischarge dietary regimen, medications, physical exercise, smoking cessation, wound care, self-care during physical activity, follow-up medical visits, and CAD signs and symptoms. The most important physical care need was information about dietary and treatment regimens. A patient expressed his concern about his postdischarge sexual activity by saying, “I have not received any information in this regard and nobody has told me about it” (Patient 6). Moreover, a nurse highlighted, “We usually do not give them any kind of information regarding sexual activities, though they frequently ask us about it. It is difficult for us to tell them anything in this regard. For male patients, we may decide to superficially teach their wives. Moreover, we indirectly teach them about sexual activities by warning them against intense activities” (Nurse 1).

Psychological care needs

Psychological care needs were mainly related to stress and anxiety management and depression prevention. “I must try to avoid stress. I must beg holy Imams to give me calmness. My son also told me not to preoccupy with anything and just take rest” (Patient 2).

An acute cardiac problem and its subsequent hospitalization can make patients nervous, anxious, and depressed. Therefore, patients with CAD need educations about how to fulfill their psychological care needs after hospital discharge. However, most educations provided

Table 1: Coronary artery disease patient's care needs based on the results of the literature review

Meaning units	Categories	Themes
A brief familiarization with cardiac physiology and anatomy, acute coronary syndrome, and its symptoms (12)	Education about the underlying disease (31)	Physical care needs
Resuming sexual activity after acquiring the ability to walk with the speed of 4.8-6.4 km/h; assuming a comfortable sex position; starting sexual activity at least 1 h after eating or drinking, and having sexual activity after adequate rest (33)	Sexual activity (31)	
Physical activity for 20-30 min/day five times a week; gradual increase in the duration of the activity; engaging in physical activity during daily activities (e.g., parking a car away from workplace to walk to workplace; walking or jogging for 15 min during lunch break; and engaging in occupational and social activities (13)	Physical activity (31)	
Education regarding nonmodifiable risk factors (such as age, gender, and family history) and modifiable risk factors (such as smoking, hyperlipidemia, diabetes, and obesity) (33)	Risk factor modification (31)	
Using healthy cardiac dietary regimen; avoidance from heavy meals; avoidance from eating too quickly; dietary modifications for lowering blood pressure and sugar (15)	Dietary regimen: a balanced low-salt low-fat low-calorie diet (33)	
Names of medications; applications of medications; medications side effects (29)	Medications (31)	
Daily walk for specified amounts of distance and time; avoiding isometric exercises (such as weightlifting); avoiding exercises which need large amount of energy; and stopping exercise in case of chest pain, dyspnea, weakness, exhaustion, and tachycardia (16)	Permitted level of physical activity: light exercises such as raising the shoulders, wrist movements, jogging, and deep breathing exercises (34)	
Self-monitoring recommendations including heartbeat monitoring; recognizing the signs and symptoms of cardiac problems during physical activities (33)	Self-monitoring during physical activity (31)	
Smoking cessation; avoidance from areas where others are smoking (32)	Smoking cessation (31)	
Patient education about regular medical visits based on physician's recommendations (35)	Follow-up medical visits (31)	
Medical visit in case of dyspnea, fainting, tachycardia, bradycardia, edema in the hands or the feet, and high blood pressure which stays high for 15 min after nitroglycerine use (16)	Education about reporting significant signs and symptoms (31)	
Antimicrobial dressing for seven days; daily wound washing with a sponge and antimicrobial soap; avoidance from applying pomade or lotion to the wound area; avoidance from using tub; highlighting that itching and burning sensations around the wound are normal; close attention to the symptoms of infection such as body temperature of 38.5°C or more, palpitation, wound opening or edema, pus or blood release from the wound, and foul smell (14)	Wound care (32)	
Avoidance from anger and stressful situations; performing muscle stretching exercises and deep breathing; positive thinking for 20 min in stressful situations (36)	Stress and anxiety management (31)	Psychological care needs
Patient education about daily jogging, taking rest between physical activities, participating in appropriate recreational and spiritual activities such as praying and sharing feelings with family and friends (36)	Depression prevention (31)	
Avoidance from visiting people who have a cold and people who cause stress and anxiety (37)	Visitation of family members and friends	Social care needs
Medical visit and consideration of returning to work 4-6 weeks after hospital discharge; replacement of intense activities with light ones; avoidance from intense activities which cause chest pain (37)	Returning to work	

to these patients during their hospital stay were related to their physical care needs.

Social care needs

Social care needs covered aspects such as social relationships after getting discharged from hospital and returning to work and other social activities. CAD patients are preoccupied with the exact time they can visit their family members and friends as well as the time they can return to work. Therefore, they need educations about resuming their social activities. A participating nurse noted, “These patients need to avoid public places and any kind of physical contact (such as handshaking) with people who have been in pilgrimage cities. Such cities host pilgrims from different cities and countries, and hence, pilgrims are at risk for contagious diseases” (Nurse 5).

Spiritual care needs

This type of CAD patients’ care needs was unique to the fieldwork phase of the study and highlighted a new aspect of care needs among these patients which was different from what had already been reported in the literature. One of the patients commented: “I’m a nervous man and hence, spirituality can really help me. But I have not enough experience in spirituality” (Patient 1). Another patient also said: “Spiritual beliefs are very useful and can calm me. I thank God who helps us [Table 2]. But, I’m very sorry to be unable to say my prayers for some days” (Patient 3).

Final analytic phase

The results of the fieldwork phase confirmed the results of the theoretical phase. In addition, the results of the fieldwork phase revealed another care need dimension among CAD patients which was spiritual care needs. Therefore, CAD patients have four main types of care needs, namely physical, psychological, social, and spiritual care needs. Based on the findings of this study, the concept of care needs in the phase I of CR can be defined as, “information and skills in physical, psychological, social, and spiritual dimensions to return to healthy and normal life.”

DISCUSSION

This study analyzed the concept of care needs in the Phase I of CR using the hybrid model. The findings of

the theoretical phase of the study showed that care needs included physical, psychological, and social needs. In the fieldwork phase, the data collected from people in the sociocultural context of Iran confirmed the data obtained from the literature review and added the spiritual care needs dimension to the concept. During interviews, we frequently observed that participating patients felt calm through remembering God, bending their health to his will, and resorting to holy Imams. Such calmness helped reduce their stress and anxiety and improve their conditions. However, patients received no education or had no guideline for effectively fulfilling their spiritual needs. Previous studies have also shown that provision of spiritual care has positive effects on individuals’ response to stress, make them solace and confident, facilitate treatment-related decision-making, improve their compliance with medical care, and enhance their quality of life. Moreover, the provision of spiritual care to patients can improve their psychological well-being, alleviate their physical pains and anxiety, decrease the risk of developing depression, accelerate patients’ recovery, boost their hope, strengthen nurse–patient relationship, and give meaning and purpose to life.^[31,32]

Physical needs are one of the main aspects of care needs in the Phase I of CR. In this phase, patients with CAD need to receive detailed information about their disease and its risk factors.^[33] However, the results of the fieldwork phase of our study showed that they did not receive adequate education about CAD risk factors. Lack of knowledge about CAD and its risk factors can worsen patients’ conditions and cause frequent hospitalizations.

Our fieldwork findings revealed informational needs about sexual activities as one of the most important physical care needs of patients with CAD. Similarly, a former study reported that sexual needs were among the predischarge needs of patients with heart attack.^[34] However, our patients did not receive adequate information about the permitted level of sexual activities. The main reason behind inadequate patient education about sexual needs may be the fact that in the cultural context of Iran, people, even health-care professionals, are reluctant to explicitly talk about sexuality due to their cultural and religious beliefs.

Table 2: The process of formation of categories and subcategory from initial codes in fieldwork phase

Meaning unit	Code	Subcategory	Category
Spiritual beliefs are very useful and can calm me	Spirituality help you get calm down	Relaxation induced by spirituality Ways to meet spiritual needs	Spiritual care needs
I thank God as he helps us	The importance of spiritual issues for the patient	Inadequate training on the impact of spirituality	
I cannot say my prayers and I am very sorry about it, of course, spiritual beliefs are very important	Getting help from God Belief in destiny		

Another aspect of physical care needs in the present study was related to physical activity. Patients with CAD are recommended to engage in light physical exercises such as weight-bearing exercises, jogging, and deep-breathing exercises.^[35] Moreover, after open-heart surgery, patients need to gradually increase the frequency and the intensity of their physical activities and actively engage in their occupational activities.^[36] However, our findings revealed that CAD patients were provided with limited information, examples, and guidelines about physical activity, and hence, they were confused about their physical activities and were at risk for engagement in intense or inadequate physical activities. Inadequate patient education to our patients might have been because patient education was the responsibility of the rehabilitation team, which did not include nurses.

Other aspects of physical care need in the present study were related to dietary regimen, wound care, and symptom management. Patients with CAD need to restrict their salt, fat, and calorie intake^[37] and carefully care for their wounds. However, our fieldwork findings revealed that neither nurses nor patients had adequate knowledge about CAD-related dietary restrictions, while patients reported that they had received educations about wound care, wound infection, and time for medical visits. An earlier study also reported that wound care was one of the most important informational needs among patients with CAD.^[13] Another study also indicated that patients with CAD who undergo bypass graft surgery need educations about effective wound care and also about the necessity of medical visits when developing problems such as dyspnea, fainting, tachycardia, bradycardia, and edema in the feet or the wrist.^[30] Yet, most of our patients had not received such educations.

The second main care needs of patients with CAD were psychological care needs. These patients need to avoid anger or stressful situations.^[38] However, our findings highlighted the inadequacy of patient education in this area. Accordingly, participating patients used the same techniques they already knew and used for anger and stress prevention and management.

Social care needs were the third main care needs of patients with CAD. One of the main aspects of social care needs was related to returning to work. An earlier study reported that 85% of the variance of the ability to return to work was determined by the three factors of age, patient's perception of CAD-induced occupational disability, and physician's view on patient's occupational disability.^[39] Yet, patients in the fieldwork phase of our study had not received adequate information about the time to return to work and the permitted level of occupational activities. Inability to return to work and

its associated financial problems can cause patients different levels of stress.

As a limitation, we had no access to the full text of some of the retrieved articles and hence, excluded some potentially eligible articles from the study. Moreover, we excluded those documents which were not in Persian or English.

CONCLUSION

The concept of care needs in the Phase I of CR includes the four main dimensions of physical, psychological, social, and spiritual care needs. The findings of this study provide useful information for the careful assessment of CAD patients' care needs in the Phase I of CR. Accordingly, these findings can be used to develop valid and reliable tools for care need assessment among patients with CAD. Such instruments can be used not only for care need assessment but also for the evaluation of need fulfillment interventions.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Roger VL, Go AS, Lloyd-Jones DM, Benjamin EJ, Berry JD, Borden WB, *et al.* Heart disease and stroke statistics-2012 update: A report from the American Heart Association. *Circulation* 2012;125:e2-20.
2. Roger VL, Go AS, Lloyd-Jones DM, Adams RJ, Berry JD, Brown TM, *et al.* Heart disease and stroke statistics--2011 update: A report from the American Heart Association. *Circulation* 2011;123:e18-e209.
3. Hatmi ZN, Tahvildari S, Gafarzadeh Motlag A, Sabouri Kashani A. Prevalence of coronary artery disease risk factors in Iran: A population based survey. *BMC Cardiovasc Disord* 2007;7:32.
4. Murray CJ, Lopez AD. Mortality by cause for eight regions of the world: Global Burden of Disease Study. *Lancet* 1997;349:1269-76.
5. Hadaegh F, Harati H, Ghanbarian A, Azizi F. Prevalence of coronary heart disease among Tehran adults: Tehran lipid and glucose study. *East Mediterr Health J* 2009;15:157-66.
6. Huffman JC, Smith FA, Blais MA, Januzzi JL, Fricchione GL. Anxiety, independent of depressive symptoms, is associated with in-hospital cardiac complications after acute myocardial infarction. *J Psychosom Res* 2008;65:557-63.
7. Firdaus M, Asbury JM, Reynolds DW. A new paradigm of

- cardiovascular risk factor modification. *Vasc Health Risk Manag* 2005;1:101-9.
8. Mampuya WM. Cardiac rehabilitation past, present and future: An overview. *Cardiovasc Diagn Ther* 2012;2:38-49.
 9. Price KJ, Gordon BA, Bird SR, Benson AC. A review of guidelines for cardiac rehabilitation exercise programmes: Is there an international consensus? *Eur J Prev Cardiol* 2016;23:1715-33.
 10. Ghalamghash R, Keyhani MR, Gousheh B, Bazr Afshan AR, Barzegari M, Hoseini A. [The importance of phase I cardiac rehabilitation and evaluation of its performance in Tehran city hospitals]. *J Med Council* 2006;24:123-32.
 11. Conway J, McMillan MA, Solman A. Enhancing cardiac rehabilitation nursing through aligning practice to theory: Implications for nursing education. *J Contin Educ Nurs* 2006;37:233-8.
 12. Ghisi GL, Grace SL, Thomas S, Evans MF, Oh P. Development and psychometric validation of a scale to assess information needs in cardiac rehabilitation: The INCR tool. *Patient Educ Couns* 2013;91:337-43.
 13. Eshah NF. Jordanian acute coronary syndrome patients' learning needs: Implications for cardiac rehabilitation and secondary prevention programs. *Nurs Health Sci* 2011;13:238-45.
 14. Gao FJ, Yao KP, Tsai CS, Wang KY. Predictors of health care needs in discharged patients who have undergone coronary artery bypass graft surgery. *Heart Lung* 2009;38:182-91.
 15. Wu CY. Assessment of postdischarge concerns of coronary artery bypass graft patients. *J Cardiovasc Nurs* 1995;10:1-7.
 16. Goodman H. Patients' perceptions of their education needs in the first six weeks following discharge after cardiac surgery. *J Adv Nurs* 1997;25:1241-51.
 17. Fridlund B. The role of the nurse in cardiac rehabilitation programmes. *Eur J Cardiovasc Nurs* 2002;1:15-8.
 18. Adams T. The idea of revolution in the development of nursing theory. *J Adv Nurs* 1991;16:1487-91.
 19. Desanto-Madeya S. Framework for analysis and evaluation of nursing theories. In: Fawcett J, editor. *Contemporary Nursing Knowledge: Analysis and Evaluation of Nursing Models and Theories*. 2nd ed. Philadelphia, PA: F. A. Davis Company; 2006. p. 441-50.
 20. Jasper M. Expert: A discussion of the implications of the concept as used in nursing. *J Adv Nurs* 1994; 20: 769-776.
 21. Rhodes ML, Curran C. Use of the human patient simulator to teach clinical judgment skills in a baccalaureate nursing program. *Comput Inform Nurs* 2005;23:256-62.
 22. Brown JB, Brown L, Weston WW, Stewart M. Understanding the family's experience of illness: Part II. *OMA Rev* 1994;35:55-6.
 23. Hodgson C. Transcultural nursing: The Canadian experience. *Can Nurse* 1980;76:23-5.
 24. Schwartz-Barcott D, Kim HS. An expansion and elaboration of the hybrid model of concept development. 2nd ed. In: Rodgers BL, Knaf KA, editors. *Concept development in nursing foundations, techniques and applications*. Philadelphia: Saunders; 2000. p. 129-59.
 25. Morse JM, Hupcey JE, Mitcham C, Lenz ER. Concept analysis in nursing research: A critical appraisal. *Sch Inq Nurs Pract* 1996;10:253-77.
 26. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res* 2005;15:1277-88.
 27. Lincoln YS, Guba E. *Naturalistic Enquiry*. Beverley Hills, CA: Sage; 1985.
 28. Scott JT, Thompson DR. Assessing the information needs of post-myocardial infarction patients: A systematic review. *Patient Educ Couns* 2003;50:167-77.
 29. Karlik BA, Yarcheski A, Braun J, Wu M. Learning needs of patients with angina: An extension study. *J Cardiovasc Nurs* 1990;4:70-82.
 30. Alkubati SA, Al-Zaru IM, Khater W, Ammouri AA. Perceived learning needs of Yemeni patients after coronary artery bypass graft surgery. *J Clin Nurs* 2013;22:930-8.
 31. Adib-Hajbaghery M, Zehtabchi S, Fini IA. Iranian nurses' professional competence in spiritual care in 2014. *Nurs Ethics* 2017;24:462-73.
 32. McSherry W. *Making Sense of Spirituality in Nursing and Health Care Practice: An Interactive Approach*. London: Jessica Kingsley Publishers; 2006.
 33. Murphy MC, George MV, Driscoll AL. Concordance with phase-one cardiac rehabilitation guidelines in the inpatient setting. *Aust J Adv Nurs* 2007;25:31-7.
 34. Smith J, Liles C. Information needs before hospital discharge of myocardial infarction patients: A comparative, descriptive study. *J Clin Nurs* 2007;16:662-71.
 35. Ahmed S. *Cardiac nursing: A comprehensive guide*, second edition. *Nurs Stand* 2002;16:29.
 36. Leon AS, Franklin BA, Costa F, Balady GJ, Berra KA, Stewart KJ, *et al.* Cardiac rehabilitation and secondary prevention of coronary heart disease: An American Heart Association scientific statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity), in collaboration with the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation* 2005;111:369-76.
 37. Timmins F. A review of the information needs of patients with acute coronary syndromes. *Nurs Crit Care* 2005;10:174-83.
 38. Arab M, Ranjbar H, Hoseyn Rezaii H, Khoshab H. Assessment of the depression and anxiety in patients with acute coronary artery disease. *Iran J Crit Care Nurs* 2012;4:197-202.
 39. Mittag O, Kolenda KD, Nordman KJ, Bernien J, Maurischat C. Return to work after myocardial infarction/coronary artery bypass grafting: Patients' and physicians' initial viewpoints and outcome 12 months later. *Soc Sci Med* 2001;52:1441-50.