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Why do patients with ischemic heart disease modify their lifestyle? a qualitative study

Motivations for lifestyle modification after IHD

Naser Javadi[1], Mansour Dianati[2] and Mohsen Taghadosi[3*]

Abstract

Objective Ischemic Heart Disease (IHD) is a major cause of death worldwide, particularly in low- to middle-income nations, such as Iran. Lifestyle modification (LSM) (e.g., healthy nutritional patterns, regular physical activity, smoking cessation, and stress management) can prevent the development of IHD. This study aimed to identify the motivations behind LSM in patients with IHD.

Results This qualitative study employed traditional content analysis and purposive sampling from cardiac rehabilitation (CR) centers in Iran. Data were collected through semi-structured interviews, analyzed using Graneheim and Lundman steps, conducted from October 2023 to September 2024. The participants included 15 IHD patients with LSM experience, one patient's son, and 4 healthcare professionals (nurses, clinical psychologists, cardiologists, and nutritionists). The patients had an average age of 63 years and varied in sex, occupation, education, and marital status. Interviews averaged 69 min, ranging from 50 to 100 min. The analysis revealed a theme of "seeking wise survival," with 10 subcategories and three categories: interest and fear (e.g., family interest, fear of death), comprehensive recommendations, and individual and social benefits (e.g., time and cost savings). The findings of this study provide scientific evidence for HCPs to encourage and educate patients and their families regarding the LSM.

Keywords Cardiovascular disease, Ischemic heart disease, Lifestyle risk reduction, Motivation, Qualitative research, Self-efficacy

Introduction

Lifestyle behavior (LB) influences health through physical activity, alcohol and tobacco use, psychological state, sleep, weight, and diet [1, 2]. Lifestyle is associated with many diseases, including cardiovascular disease (CVD). Individuals with the healthiest combination of LBs exhibited significant risk reductions of 58% for CVD and 55% for CVD mortality [3]. Ischemic heart disease (IHD), the most important CVD, has caused over nine million deaths in 2021. Incorrect lifestyle patterns account for nearly 40% of deaths in the USA [4].

The primary intervention for preventing and managing CVDs is lifestyle modification (LSM), encompassing nutritional changes (healthy food patterns, e.g.,

*Correspondence:
Mohsen Taghadosi
Taghadosi_1345@yahoo.com
[1]Trauma Nursing Research Center, School of Nursing and Midwifery, Kashan University of Medical Sciences, Kashan, Iran
[2]Faculty of Nursing & Midwifery, Trauma Nursing Research Center, School of Nursing and Midwifery, Kashan University of Medical Sciences, Kashan, Iran
[3]Faculty of Nursing & Midwifery, Trauma Nursing Research Center, Department of Medical Surgical Nursing, School of Nursing and Midwifery, Kashan University of Medical Sciences, Kashan, Iran

Mediterranean), smoking cessation (e.g., trans theoretical model course plan), sleep and stress management (with strategies such as mindfulness), weight control, and regular exercise)e.g., regular aerobic exercise such as walking and cycling([5–7]. Due to poor adherence to LSM, researchers have focused on identifying and enhancing factors in patients with IHD. Modifying behavior is the most effective method to reduce mortality and improve health [8, 9]. The likelihood of CVD recurrence and all-cause mortality was reduced by 27% in each healthy LB [3]. Motivation is a crucial aspect of LB that explains why individuals act and lead to LSM [10, 11].

Iran, a developing Asian country, had the highest age-standardized DALY rate for IHD from 1990 to 2019, ranking the worst among the 204 countries in 2019. High systolic blood pressure, elevated low-density lipoprotein cholesterol (LDL-C), high fasting plasma glucose (FPG), and high body mass index (BMI), with an upward trend from 1990 to 2019 [12, 13]. The World Health Organization (WHO) emphasizes context-based plans to control lifestyle-related diseases [14]. A review of the articles showed that the content of motivational interventions was not based on the Iranian context or lifestyle [15–17].

LSM in patients with IHD is part of the CR program. Only approximately one-third of Iran's provinces have a CR center [18]. There have been no contextual studies on writing CR standards in Iran. The reasons for LSM in Iranian patients with IHD remain unclear. Therefore, further studies are necessary to understand the motivations behind LSM in these patients. Researchers use qualitative research methods to understand the meanings, behaviors, beliefs, and values of the participants, as well as the influence of social and cultural contexts on these elements [19]. Therefore, using a qualitative method, this study aimed to identify the motivations behind LSM in patients with IHD.

Methods

Design, participants and sampling

This study was conducted between October 2023 and September 2024 using traditional content analysis. The inclusion criteria were a definitive IHD diagnosis by a cardiologist, informed consent, minimum 6 months after LSM initiation, and modification of at least two lifestyle-related risk factors (e.g., diet, smoking cessation, and weight loss). The participants could withdraw at any time. Purposive sampling was used for selection. Participants with diverse demographic characteristics (age, education, marital status, and occupational status) were interviewed to understand their views on lifestyle modifications. The interviews continued until data saturation was reached, indicating that no new information was obtained [20].

Data collection

Following ethical approval from Kashan University of Medical Sciences, CR departments in four Iranian provinces with over 50% CR programs were visited to gather data. Eligible participants were identified and invited. After obtaining informed consent, interview schedules and locations were determined based on participant convenience. Data collection involved semi-structured in-depth interviews, field notes, and examination of patient documents in the CR departments. The interview began with the open-ended question, "What motivated you to modify your lifestyle?" An interview guide was used to gather detailed information regarding the study. It includes probes like "Please explain more," "What do you mean by this sentence?" "Why?" and "How?" and follow-up questions to explore the aspects of patient motivation (Supplementary material 1 Appendix A). The researcher used a notebook for field notes and recorded observations during data collection [21].

Data analysis

The data analysis was performed using the Graneheim–Lundman method. The research team repeatedly listened to the audio files of the interviews. The first author transcribed each interview and data analysis began. For better data management, the interviews were transferred to MAXQDA 18 software. Each interview was considered as a unit of analysis. These meaning units were summarized as short phrases without altering their meanings. Meaning units were coded through condensation, abstraction, and labeling. Coding was performed in consultation with the research team and three experienced associate faculty members for coding, classification, and theme determination. In cases of disagreement, the responsible author's opinion is usually preferred because of more experience in qualitative research. Codes were categorized according to their differences and similarities. This classification distinguishes between categories while maintaining their similarities. We examined the connections and meanings between categories more broadly. Finally, a general theme was introduced to represent the data [22].

Rigor

We used the criteria proposed by Lincoln and Goba to ensure data rigor. To create credibility, research data and findings must be reliable, based on real data collection. The data are credible only when they are dependent. To achieve credibility and dependability, we selected experienced researchers, engaged long-term researchers with data to expand the depth of information, conducted educational interviews, and used triangulation. Several participants were asked to check the interview analysis and their opinions were used. To ensure transferability, the data were representative of the entire dataset. In this

Table 1 Demographic characteristics of participating patients

Variable	Range	*N* (%)
Age (year)	30–50	3 (20)
	51–70	9 (60)
	71 ≤	3 (20)
Marital status	Married	12 (80)
	Widow	3 (20)
Educational level	Illiterate/elementary	2 (13/33)
	High school to graduate school	5 (33/33)
	Bachelor ≤	8 (53/33)
Occupational status	Housewife	3 (20)
	Retired	6 (40)
	Employed	6 (40)

Table 2 Result of data analysis (motivations for LSM after IHD)

Theme	Categories	Subcategories	Examples of codes
Seeking wise survival	Interest and fear	- Family interest	- Interest in continue family life, interest in a young child, interest in a disabled child.
		- Preferred activities	- Interest in climbing, interest in carpentry, interest in gardening.
		- Rational fear of death and disability	- Fear of being a burden, fear of sudden death, fear of seeing health complications in peers.
		- Fear of recurrence painful experiences	- Preventing heart pain recurrence, guilt from an unhealthy lifestyle, and painful heart surgery experiences
	Comprehensive recommendations	- Motivational advice	- Motivational recommendations from healthcare workers, motivational recommendations of family members, caring recommendations from friends.
		- Positive expectation	- Personal and external expectations for being an athlete, Expectations for yourself and others due to being healthcare professionals.
		- Perception of disease severity	- The perceived threat of the illness, the sense of deteriorating disease complications, and the contemplation of suicide if unable to adhere to the prescribed lifestyle
	Individual and social benefits	- Time and cost savings	- Trying to reduce medical costs, reducing wasted time in seeking medical services, and reducing costs in modified life.
		- Social responsibility	- Surviving to provide social responsibilities, surviving to compensate the efforts of relatives
		- Belief in lifestyle modification benefits	- Belief in compensation for past losses, belief in the benefits of prevention over treatment, belief in the harmfulness of smoking, and the advantages of quitting.

study, the participants with the most comprehensive coverage of the research topic were selected. To ensure confirmability, the decisions of the research team at regular meetings were consistently documented [19, 23].

Result

Fifteen patients with IHD participated in the study (Table No. 1). Additionally, one patient's son and four HCPs (nurses, clinical psychologists, cardiologists, and nutritionists) were included (Table 1). After analyzing and merging the primary codes, ten subcategories, three categories, and one theme were obtained: interest and fear, comprehensive recommendations, and individual and social benefits. The central theme was seeking wise survival (Table 2).

Interest and fear

Interests and fears, despite apparent differences, are both types of human emotion at the same level of abstraction. In this study, fear of death, disability, or painful experiences, interest in family, and favorite activities motivated patients with IHD for LSM. Interest in the family is an important motivation that leads patients to modify their lifestyles. The first participant said: "Days after the heart attack, I was in the hospital. I thought, if discharged safely, that I would have to change my life. My family's love motivates me to maintain my health." Participants indicated that their interest in hobbies and activities motivated them to change their lifestyles. Participant five said: "Everyone should have motivation to improve after the operation, and without motivation, he will not progress. My love for climbing has motivated me to change my lifestyle. I wanted the joy of climbing again."

Fear is not always negative and can motivate patients to change their lifestyles. Participant 16 said: "The constant fear of sudden death always occupies my thoughts. This persistent worry compels me to take medical recommendations seriously." Some patients feared being disabled and were burdened with IHD. Participant 15 said: "After my heart attack, I resolved to resume responsibilities and handle domestic tasks independently, aiming to change my lifestyle without burdening my family." Fear of recurrent cardiac pain can motivate patients with LSM. Participant 6 stated: "The intensity and fear of my chest pain

were terrible. I do not want to experience it again. I felt it was time to reassess my life and change my lifestyle."

Comprehensive recommendations

Patients' experiences of receiving motivational recommendations, along with positive expectations and understanding of disease severity, created a motivational structure for LSM. Recommendations from family, healthcare professionals, friends, and peers motivated patients to LSM. Participant 6 said: "The first feedback was when I lost 10 kilos. My colleagues advised me to continue modifying my lifestyle and to avoid becoming obese again. This compassionate advice motivated me to continue." Expecting positive behaviors from patients based on characteristics such as education medical sciences can motivate LSM. Participant 7 stated: "As a nurse with known heart problems, many acquaintances believe I adhere to a healthy lifestyle. I have made efforts to improve my lifestyle following angioplasty." A patient's awareness of their health status motivated them to develop LSM. Participant 15 said: " Now, I understand that my health condition and my heart disease have reached high stages and severity. However, I need to modify my lifestyle."

Individual and social benefits

Humans naturally seek profit. Some actions appear to have personal and social benefits, but they are a combination of both. Patient motivation for LSM is created and developed by thinking, believing, and experiencing personal and social benefits. The benefits of LSM, such as saving time and money, can motivate the patients. One participant said: "Under a doctor's supervision, I reduced my medication intake. This made me feel comfortable and encouraged me to continue. I traveled for diagnostic and therapeutic purposes. The lifestyle changes recommendations reduced my need for these measures, saving money and time." Additionally, a nutrition consultant noted: "Knowing what types and quantities of food to choose prevents economic problems. Many people consume more food than their bodies require, leading to high costs; a precise diet, however, is cost-effective and logical." Preventing recurrent complications is a benefit of LSM. Participant 4 said: "Illness and discomfort are not good, and it is better to prevent by changing and improving my lifestyle." Patients also mentioned the social benefits of LSM. Participant 19 stated: "With a master's degree and years of training, I believe I should contribute to society in accordance with my duties, which motivated me to modify my lifestyle."

Discussion

This study aimed to identify the motivations for LSM in patients with IHD. Researchers identified ten subcategories and three main categories: interest and fear, Comprehensive recommendations and individual and social benefits. The central theme was seeking wise survival.

Interest and fear

Patients were motivated to use LSM based on emotions such as interest and fear. Emotions play an important role in the prevention of various diseases. Based on various theories, emotions are divided into dimensional, discrete, and combined measures. Although fear and interest motivated patients to modify their lifestyles, a deeper analysis revealed opposite consequences. For example, a review highlighted family love as a key factor in enhancing patient adherence to LSM. Conversely, a study of South Asian patients with IHD showed that they preferred balancing life and interest in the unaccompanied family over LSM [24, 25]. Emotion is influenced by social, cultural, and economic factors. However, patients should protect their motivational emotions from LSM and manage their emotional distress. Some handle this adaptively through support and information, whereas others choose social isolation, exacerbating distress [26, 27].

Comprehensive recommendations

Medical advice regarding disease progression is a key reason for LSM. Aligning personal desires with family and friends' recommendations facilitates LSM. HCPs can contribute significantly to LSM through brief motivational consultations. Obstacles to the effectiveness of recommendations should be reduced as much as possible. Obstacles to LSM include inadequate training, reluctance to educate non-compliant patients, HCPs' obesity, heavy workload, limited face-to-face interactions, and a lack of patient self-confidence [4, 9, 28, 29]. The results of our study can increase HCPs' knowledge of LSM motivations using scientific evidence based on context. Additionally, patients' knowledge of healthy lifestyles can lead to a better understanding of existing conditions and motivation for LSM. One study showed that post-MI patients with greater knowledge have higher educational expectations and better LSM adherence [30].

Individual and social benefits

Belief in LSM's usefulness motivated patients to adhere to the recommendations. Our study found that adverse disease experiences and the desire to prevent further personal and social harm led people to modify their lifestyle. Consistent with these results, the health belief model (HBM) suggests that health beliefs are shaped by perceived sensitivity, severity, benefits and barriers [31]. Cultural factors such as lifestyle and social thinking patterns

can shape people's beliefs [32]. A patient's belief in LSM efficacy may contribute to its utilization. Awareness is a prerequisite for a belief. For example, awareness of IHD's financial, physical, and psychological damage strengthens the belief in LSM's usefulness. The annual cost of CVDs for Iranian people over 60 was around 1.88 billion dollars in 2021. Medical costs included direct expenses, such as medication, and indirect costs, such as healthcare-related travel. Non-medical expenses covered premature mortality and work absences for patients and caregivers [33]. Therefore, informing patients and strengthening their beliefs regarding the personal and social benefits of LSM can lead to adherence to recommendations.

The researchers ultimately introduced the findings as a theme through repeated data review and result analysis. The theme was seeking wise survival. Wisdom refers to actors who achieve altruistic outcomes by creatively solving their problems. Polyculture wisdom theory suggests that individuals embrace principles based on personal, societal, and objective perspectives, integrating them to address challenges and foster the enduring survival of human civilization [34]. People perform harmful lifestyle actions, including smoking, stress, physical inactivity, and unhealthy diets [35]. A heart attack occurs, and some patients who understand the danger of death and disability seek wisdom to reduce risks and increase the probability of survival. The first logical step is to correct pre-attack lifestyle risk factors, and patients with varying motivations act towards LSM.

Limitations

Iran is a vast country with approximately 1,650,000 km2 and 31 provinces with various ethnicities. Owing to resource and time limitations, we chose four large provinces with over 50% CR centers and wide ethnic diversity. Despite potential recall errors, researchers conducted thorough interviews with follow-up questions and used participant documents from CR centers and patients to ensure accuracy. In the CR centers, we interviewed the most experienced HCPs from different specialties who were willing to participate. We interviewed four HCPs (nurses, clinical psychologists, cardiologists, and nutritionists). Although four healthcare providers were included, the sample size may have been insufficient to capture the full range of perspectives. Interviews with patients and HCPs from CR centers in small cities with few facilities can provide more detailed information on the motivations for LSM in Iranian patients with IHD.

Conclusion

LSM in patients with IHD is a complex issue, depending on individual and social characteristics. If the focus of motivation is wise survival, these patients can rationally reduce or eliminate their lifestyle risk factors. The findings of this study can be considered as scientific evidence for HCPs to encourage and educate patients and families to modify their lifestyles. Managers and policymakers, especially in CR, can reduce physical, psychological, and economic harm by strengthening the rational motivation of patients with IHD for LSM. Further studies have suggested motivations for LSM in various diseases and their long-term impacts on LSM adherence and health outcomes.

Abbreviations

IHD	Ischemic heart disease
LSM	Lifestyle modifications
CVD	Cardiovascular diseases
HBM	Health Belief Model
CR	Cardiac rehabilitation
HCP	Healthcare professional

Supplementary information

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Supplementary Material 1

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Author contributions

N.J., M.T., and M.D. designed the study. N.J. collected and analyzed the data and drafted the manuscript. M.T. and M.D. supervised and analyzed the data and revised the manuscript. All authors approved the final version of the manuscript.

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Data availability

The data that support the findings of this study are available from corresponding author but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of participants.
Study materials, such as the interview guide, informed consent form, and ethics certificate were accessible. Participants' identities and interview contents remained confidential. The responsible author had access to the extracted interview codes, which the corresponding author supplied for ethical and logical consideration.

Declarations

Ethics approval and consent to participate

The study received ethical approval under the code IR.KAUMS.REC.1402.011 from the Kashan University of Medical Sciences Ethics Committee. The researchers followed the principles of the Declaration of Helsinki, informing the participants about the study objectives, information confidentiality, and their right to withdraw at any time. Informed consent forms and detailed explanations were provided. Interview times, locations, and durations were arranged according to participants' comfort and agreement. Participants confirmed their agreement to participate in the study by signing a written informed consent form.

Consent for publication

Not applicable.

Competing interests
The authors declare no competing interests.

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