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Title: Perspectives on barriers and facilitators to lifestyle change after cardiac events amongst patients in Saudi Arabia: A qualitative study

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Abstract

Aims

Lifestyle interventions are an essential element in the prevention of cardiovascular disease. However, promoting healthy lifestyle is challenging because a multitude of factors interact and influence people's decisions to adopt and maintain healthy lifestyles. The effects of these factors on Saudi cardiac patients are largely unknown. This study aimed to explore the barriers and facilitators to healthy lifestyle changes among Saudis after cardiac events.

Methods and results

The study followed an exploratory qualitative research design, using a social ecological approach. Semi-structured interviews were conducted with twenty-one participants (13 men and 8 women) patients who had a cardiac event. Participants were purposively recruited from cardiac clinics of two hospitals in Jeddah, Saudi Arabia. Data were analysed using the qualitative framework analysis and factors were identified as salient based on their frequency and the potential strength of their impact. Six factors were identified as influencing lifestyle behaviours in cardiac patients, categorised to “*major*” factors and “*mediating*” factors. The “*major*” factors were *sociocultural norms*; *family values*; and *religious beliefs* and the mediating factors were *insufficient healthcare services*, *physical environment*, and *policy regulations*. Depending upon the behaviours reported and the context, the same factor could be classified as both a barrier and a facilitator.

Conclusion

The findings of this study can be used to inform the development of contextual-based interventions to promote the adoption of healthy lifestyles that meet the population needs and are relevant to the Saudi society.

Keywords: Cardiovascular disease, lifestyle interventions, sociocultural norms, healthy lifestyle, qualitative, Saudi Arabia.

Introduction

Cardiovascular disease (CVD) is the leading cause of morbidity across the globe.^{1,2} In common with other rapidly developing countries, the burden of disease in Saudi Arabia has shifted from communicable to noncommunicable diseases (NCDs),^{3,4} leading to 73% of total deaths, with CVD accounting for 37% of the total deaths.^{5,6} This trend is compounded by a high exposure to risk factors that will contribute to the future increase in incidence of CVD, which are continuing to rise.^{3,4} Factors identified as driving this trend are rapid urbanization, economic growth, and changes in dietary and lifestyle habits.^{7,8,9} Prevention initiatives, including lifestyle modification offer an evidence-based approach to reduce CVD mortality and morbidity.^{10,11} Numerous studies have demonstrated that lifestyle modification is of equal importance to pharmacotherapies in reducing the risk of recurrent cardiovascular events.^{12,13,14,15} Recommendations for lifestyle modification include consuming a healthy diet, engaging in regular physical activity, smoking cessation, limiting alcohol consumption and managing psychosocial factors.^{10,16} Despite the acknowledged benefits, recommendations have not yet been fully translated into improved clinical outcomes and reported data are discouraging.^{17,18}

Changing lifestyle habits that have been developed over several years is notoriously difficult.¹⁹ A healthy lifestyle, being a multifaceted process, is influenced by various factors,^{20,21} including individual level factors (illness beliefs, health status and wellbeing)^{22,23,24} and contextual factors (sociocultural factors,^{25,26,27,28} physical environment,^{29,30} and health system/provider factors).^{31,32}

In Saudi Arabia, cultural and religious values form the cornerstone of societal behaviour. Unique customs that Saudis have are a great source of pride and identity and holding into these customs is a high priority. This social context might influence Saudis lifestyle behaviour change. However, there is a scarcity of research regarding patients' experiences with lifestyle changes following cardiac events. In addition, there are no culturally specific practice guidelines designed for CVD patients that address the unique Saudi cultural circumstances.³³ Instead, existing international guidelines provide the basis

for Saudi practice.³⁴ Thus, local evidence to understand the individual and contextual determinants of lifestyle behaviours is an important priority to enable the introduction of country-specific policies to address them and to optimise patients' outcomes. Therefore, the aim of this study was to explore the barriers and facilitators to healthy lifestyle changes among Saudis after cardiac events. To the best of our knowledge, this is the first study in this area of research conducted within the Saudi context.

Methods

Study design

This qualitative study followed a social ecological approach,³⁵ utilizing semi-structured interviews to obtain an in-depth exploration and provide a holistic understanding of the barriers and facilitators to lifestyle changes after cardiac events.³⁶ Qualitative methods are appropriate for this purpose because they elucidate personal perspectives and contextual meanings of events, processes and structures.³⁷

Setting and sample

Participants were recruited from cardiac clinics of two public hospitals in Jeddah, Saudi Arabia. A purposive sampling technique³⁷ was used to recruit participants with variant characteristics to better capture their potential differences. Of the 26 eligible patients, 21 patients aged between 36 and 72 years participated in this research (Table 1). Inclusion criteria included: (a) Saudi adults 35 years old and over; and (b) had experienced a cardiac event within 2 years or more prior to data collection. Clinic nurses approached the patients and delivered the study information. Participants and the interviewer had not met before the participants were recruited to the research.

Data Collection

Face-to-face individual interviews were conducted at the clinics. All the interviews were conducted in Arabic language by the first author [AT], a female Saudi researcher with cultural commonalities with the participants. Thus enabled the participants to respond to sensitive issues in an appropriate

manner. To ensure rigour of the study, AT maintained a reflective journal to acknowledge any personal biases that may have influenced the research findings. All authors are experienced in qualitative research. The interview guide was developed based on the core concepts of the Social Ecological Model,³⁵ covering the multilevel influences on participants' lifestyle behaviours (Figure 1). The interview guide was piloted with two participants and no further changes were necessary, thus the pilot data were included in the analysis. The interviews duration ranged between 30 to 80 minutes. Participants attended their interviews alone except for two interviews where the participants requested that their family members attend with them to increase the accuracy of sensitive information. In both interviews family members did not participate and their presence was recorded in the field notes to provide context for each interview. The interviews were audio-recorded, transcribed simultaneously with translation into English then translated backward by an independent bilingual translator. Field notes were recorded simultaneously to capture the context and augment the interview data. Sample saturation was achieved when collecting data no longer sparked new insights.

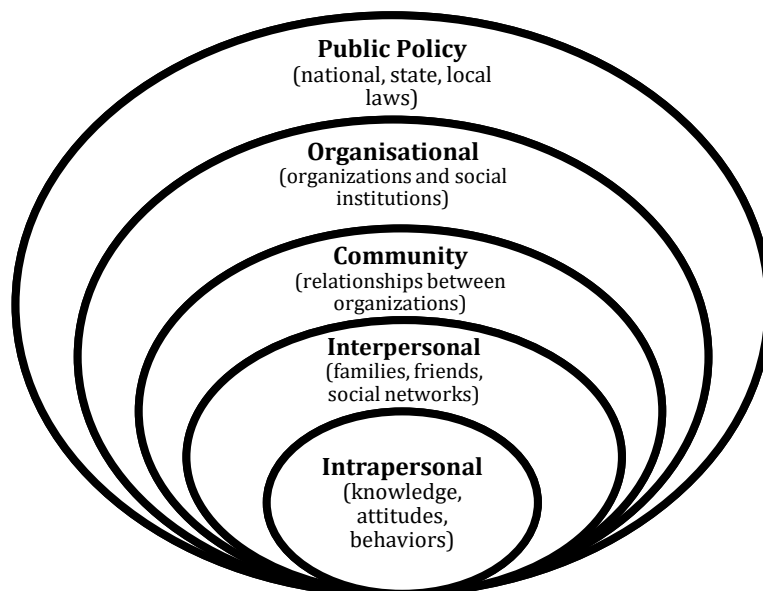


Figure 1 The Social Ecological Model (adapted from McLeroy et al.³⁵)

Ethical considerations

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki.³⁸ Ethical approval was granted by the research ethics committee at the University of Edinburgh (NURS018) and the local hospitals in Saudi Arabia (ref no. 279-16) and (REC-192). and the local hospitals in Saudi Arabia [details omitted for double-anonymised peer review]. In line with beneficence and maleficence principles,³⁹ all participants received detailed information about the study and were informed that their participation was entirely voluntary, and they could withdraw from the study at anytime with no consequences. Participants were informed that potential harm from participation is very unlikely, however, the risk of disclosing personal and sensitive information was discussed. To tackle this risk, participants were told that they have the right to decline answering any question they don't want to answer and stop discussing any topic further. Only the first author knew the participants' identities, while the other authors worked with anonymised data.

Data Analysis

Using the framework method prescribed by Ritchie & Spencer,⁴⁰ data were analysed in five main stages: (a) familiarisation with the data by reading transcripts and listening to audio-recorded interviews; (b) inductively coding and constructing thematic framework from the recurrent themes identified during familiarisation; (c) indexing and sorting the data by applying the initial thematic framework; (d) data summary and display using framework matrix; (e) mapping and interpreting the data by applying the theoretical concepts that matched the data. In early analysis, the focus was to keep the interpretation heavily grounded in the data and analyze it inductively to ensure important themes were not lost through the deductive data analysis. Towards the end of the analysis, the findings were placed back at the wider context of theory and existing knowledge. Applying the theoretical framework at a late stage ensured that detailed richness in the data is preserved and prevented from forcing the findings to fit into preconceived ideas.⁴¹ All transcripts were analysed by [AT] and independently reviewed by other authors [CC] and [AH] to ensure the reliability of the coding. Analytic meetings with the research

team were carried regularly to ensure that one perspective does not dominate. A computer assisted qualitative data analysis software, NVivo version 11, was involved which offered a framework matrix feature.

Results

Analysis of the interviews yielded six key themes illustrating the major and mediating factors influencing patients' decisions to adopt healthy lifestyles after cardiac events. The major factors were (a) sociocultural norms; (b) religious beliefs; (c) family values. The mediating factors were (d) insufficient healthcare services; (e) physical environment; and (f) policy regulations. Depending upon the context, the same factor could be classified as either a barrier or a facilitator or both. Themes are exemplified below with quotations from the interviews, which are set in italics in the text.

Theme 1: Sociocultural norms

This theme illustrates how the society's cultural norms were perceived as a major barrier to adopting healthy lifestyles. Two subthemes fall under this theme: (a) the cultural value of traditional food and (b) established gender roles.

Subtheme 1.1: *The cultural value of traditional food*. Throughout the interviews, participants emphasised the fundamental role traditional food plays in Saudi culture. They described how their dietary habits are not only associated with nutrition and energy input, but also a symbol of cultural identity and sentimental values. They believed that adhering to their cultural eating norms helped them to maintain their social identity, while sacrificing their own health:

"If I want to invite people over at my house, I have to invite them over a meal, because we have to be generous with our guests. I must serve them our traditional food, which is high in fat. It will be disrespectful not to do so. This makes it extremely difficult to maintain my diet". (P7)

The cultural value of attending social gatherings was also highlighted. Participants often felt pressured to eat on such occasions because refusal to accept food is widely known as unacceptable social behaviour. One participant described this challenge:

“I hate when I find myself forced to eat at gatherings or weddings. You know some of the hosts insist hardily. If we could lose this tradition, it would be much easier to maintain our diets.” (P14)

Subtheme 1.2 *Established gender roles*: prominent among female participants was the perception of feeling constrained by the society’s enforced traditional gender roles. They pondered about how they were socially obliged to prioritise their family responsibilities over their own health, making it very challenging to change their behaviours despite their willingness to change:

“I wish I could go to the gym, but my husband won’t let me. He thinks that I better look after my children.” (P8)

Cultural traditions and practices such as wearing *Abaya* in public was seen as a barrier to engage in physical activity:

“Our culture is influencing every aspect of our lives. I prefer walking outdoors than going to gym, but this means that I must walk or jog wearing Abaya, which is really difficult. this limits our options.” (P11)

Theme 2: Religious beliefs

Religion and faith provided the participants with a context in which to situate and cope with their illness. Participants explained how their faith was not only a set of spiritual beliefs but a way of living and was tightly intertwined with their lifestyle practices:

“Following Islamic teachings encourages us to adopt and maintain a healthier lifestyle. Moderate eating, alcohol and smoking prohibition and fasting are few of so many Islamic rules that help in living healthier lives.” (P17)

In addition, a belief in illness determination and subsequent lack of control on illness onset was discussed. Participants believed they had been fated to be ill, however they were still willing to change their lifestyles:

“I believe in illness determination; however, I do not deny my responsibility toward my health.” (P1).

Theme 3: Family values

This theme centres on the impact of family values on participants' decisions to make lifestyle changes. Being supported by family and friends was perceived as a facilitator to maintain healthy lifestyles. Participants described how strong family ties encouraged them to maintain their healthy lifestyles:

“They [my family] are all living healthy lifestyles too. They are all physically active. It does really help when everyone around you is engaging in healthy activities. It becomes much easier.” (P15).

Emotional support, including expressions of empathy, caring and trust from family members was noted as a facilitator to tackle the challenges they face in changing their behaviours:

“Sometimes I give up and lose hope, but my children never do. They give me words of encouragement and tremendous support. Their words motivate me to stay on track.” (P17)

Theme 4: Insufficient healthcare services

Participants recognised that insufficient support from healthcare professionals adversely impacted the effectiveness of their lifestyle modification. Support included the components of good communication, lifestyle advice, accessibility, and active partnership with patients. They cited poor communication as a serious challenge in their relationships with physicians. Rushed consultations, lack of attention and empathy among other concerns were reported:

“It is really important for us to spend enough time and not be rushed. People wait weeks for their appointments. Imagine the disappointment when the doctor looks busy and doesn’t give you the full attention. This really matters.” (P11)

Participants also noted that physicians were reluctant to discuss lifestyle advice during consultations. They complained that the information was brief, limited to the time of diagnosis and standardised rather than individualised:

“I was instructed to adopt a healthier lifestyle, no smoking, healthy diet and physical activity. However, the cardiologist gave me all the instructions casually and nothing was written. There should be a systemised follow-up routine for patients with chronic conditions.” (P7)

Theme 5: Physical environment

This theme presents the environmental factors that influence the adoption of healthy lifestyles after cardiac events. Concerns with neighbourhood safety were raised by participants particularly with the lack of pedestrians’ cross signs, missing sidewalks and uneven pavements:

“No one can go out there and walk safely. I find it very dangerous to walk with my wife and children because there are no sidewalks or traffic lights. Living in this neighbourhood makes it harder for me to adhere to my daily walking routine” (P16).

Conversely, participants who lived in newly developed neighbourhoods were pleased with the available facilities:

“I am lucky that I live in a facilitated neighbourhood. We have a major walkway within a walking distant from my house. You see people all the time walking and that motivates me to go and walk.” (P5)

Lack of walking culture due to dominance of cars as a form of transportation was also perceived as an environmental barrier to physical activity:

“Physical activity is not incorporated within our everyday routine. We never go to work walking. It is not part of our culture.” (P9)

Theme 6: Policy regulations

This theme is concerned with the policies that are likely to influence the promotion of healthy lifestyles after CVD diagnosis. It appeared that most of the participants were unaware of the existing public and governmental initiatives to promote healthy lifestyles:

“I think we now see more awareness campaigns and events compared to before. The focus is more on epidemic topics though. Importance of healthy lifestyle and heart health awareness programs are rarely seen.” (P18)

Participants also made suggestions for improvement and multi-sectorial collaborations including developing cardiac rehabilitation programs to support lifestyle change after discharge from the hospital:

“The Hospital has a responsibility toward me as a cardiac patient. They need to motivate me to adopt a healthy lifestyle. For example, if this hospital does not have enough facilities like rehabilitation why not to refer me to private facilities where I can get these services for free or with a discounted price?” (P3)

Discussion

This is the first study that we are aware of that explored the barriers and facilitators to lifestyle changes after cardiac events in Saudi Arabia. The use of qualitative design fostered an in-depth understanding of the different factors that influence cardiac patients lifestyle habits and helped to reveal more nuanced aspects with regard to lifestyle behaviour change. The study extends the literature by conceptualizing these factors through the lens of the social

ecological approach³⁵ (Figure 2). Utilising this model facilitated the recognition that Saudis' lifestyle behaviours are too complex to be understood at one level. Instead, a multilevel influence is revealed. Within this framework, sociocultural norms, religious beliefs, and family values were identified as major factors, whereas insufficient healthcare services, physical environment, and policy regulation were mediating factors. Sociocultural norms appeared the most influential; thereby it was placed at the top of the triangle, with religious beliefs and family values having equal influences and therefore placed next. Thereafter, a relationship between the major and mediating factors was illustrated by double ending arrows, which collectively are assumed to result in individuals either taking or not taking healthy lifestyle actions following cardiac event.

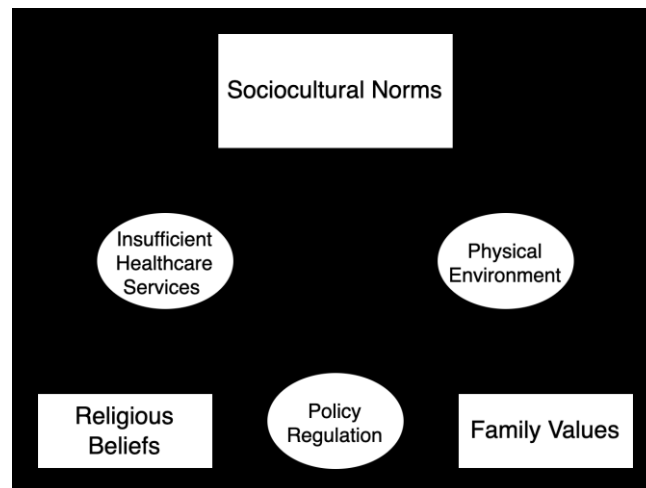


Figure 2: Barriers and facilitators to lifestyle change after cardiac events

At the intrapersonal level, the study has shown that Saudis lifestyle behaviour is highly motivated by their religious beliefs, which encourage the promotion of health and place the responsibility on the individual to maintain their health, supporting previous findings suggesting the connectivity between health and religion in other Islamic countries.^{27,42,43} Participants were willing to make lifestyle changes and acknowledged their responsibility to protect their health despite their belief in illness determination, echoing previous studies that recognised illness determination as an important influence on chronic disease management within the Saudi context.^{44,45}

At the interpersonal level, family values appeared as the most significant entity impacting participants behaviour. Families in Saudi Arabia are collectivist in nature, in which members support each other and keep unity at the forefront.⁴⁶ Strong family bonds and the emotional and practical support participants were surrounded with appeared crucial in motivating them to maintain their lifestyle changes. This finding mirrored the literature on the positive influence of family support on patients' lifestyle behaviours after cardiac events in contexts other than Saudi Arabia.^{23,25,27}

At the institutional level, insufficient healthcare services played an important role in shaping participants' attitudes towards the adoption of healthy lifestyles. Participants had high expectations from healthcare professionals, in terms of informational needs and communication skills, yet such expectations were hardly ever met. Interviews demonstrated that discussing lifestyle changes with physicians was often disregarded or restricted to the time of diagnosis, leaving patients with unanswered questions. This finding echoes existing literature on the impact of inadequate healthcare services on patients' attitudes toward the maintenance of healthy lifestyles in Saudi Arabia,^{47,48} highlighting challenges with the Saudi healthcare system that need to be addressed to facilitate lifestyle change for CVD patients.

Community level factors include the sociocultural norms and the physical environment. Established social norms were revealed as having a tremendous impact on patients' attitudes toward living healthy lifestyles. The value of consuming traditional food had multiple meanings attached to participants' lives, because a central component of Saudi culture revolves around generosity with food offering.^{49,50} Such an act was perceived as a symbol of socialisation and an expression of cultural identity. This in turn had a negative impact on their dietary modification attempts, given that diet's high fat contents.^{51,52} In addition, social gatherings were seen as possible contexts where individuals are challenged to adhere to their healthy diets. Hence, the fear of being seen as disrespectful by not eating, or the desire to correspond to the social expectations, forced participants to eat whatever is served as a means of social integration. This finding complements other similar studies conducted in South Asian countries that revealed an interplay between individual's dietary practices and their cultural norms,^{53,54,55} and concurs with

previous studies indicating that Saudis prefer consuming traditional food despite their awareness of their increased risk of developing or exacerbating their CVD.^{50,56,57,58} It was also evident how established gender roles, compounded by the cultural expectations to attend to household chores and prioritise family responsibilities conflicted with women health promotion attempts. This finding supports the findings of Alharbi,⁵⁹ who highlighted the negative impact of conservative Saudi norms on women's physical activity levels, as well as other studies conducted in South Asian countries.^{55,60,61} Physical environment appeared to exercise a further influence on participants. Safety concerns, due to the lack of pedestrian crossing and missing pavements/sidewalks was perceived as a barrier to physical mobility. This finding complements other studies that have reported the impact of environmental factors on lifestyle behaviours in contexts other than Saudi Arabia.^{62,63,64} Consistent with the findings of AlQuaiz and Tayel⁴⁸ and Samara et al.,⁶⁵ the study revealed that lack of resources was a barrier to physical activity behaviour, especially for females. Thus, gender specific recreational facilities must be considered when developing interventions for this population.

At the public policy level, lack of policies that may influence the promotion of healthy lifestyles was revealed. Although a few preventive strategies are implemented in the country, participants were unaware they existed, reflecting poor advertisement and spread. Participants advocated multisectoral collaborations and using media in developing lifestyle promotion awareness initiatives, complementing the Saudi Government National Transformational Plan (NTP), which emphasises multisectoralism in addressing prevention of NCDs.⁶⁶

Multiple strategies were adopted in this study to ensure rigour particularly addressing issues of credibility, confirmability, dependability, and transferability³⁹. Credibility of findings was ensured through a peer-checking process. Whereas the audio recording of interviews increased the confirmability of findings. To strengthen dependability, one author conducted all interviews. Finally, a detailed description of the research setting, methods, participants, as well as the theoretical assumptions underpinning the study were provided to ensure the transferability of the study findings.

Despite the study attempts to accomplish its aim, it has certain limitations. Interviews were conducted in a specific geographic location; hence the findings may not be applicable to the entire CVD population in Saudi Arabia. In addition, most participants were male with graduate degrees, representing a sample limitation. Future studies with larger sample and perhaps gender based analysis are recommended considering the serious issues pertaining to female cardiac patients that this study revealed. Further, although one author conducted all the interviews, there is still a possibility that certain expressions in Arabic were not given the exact same meaning in English during translation.

Conclusion

Understanding Saudi patients experiences in making lifestyle changes following cardiac events provides a practical insight into the factors that patients face to accommodate the change in their health status, thereby improving clinical care and outcomes. This study revealed that lifestyle choices of Saudis living with CVD are largely connected to, and informed by, their sociocultural norms, religious beliefs, and family values. The study also uncovered some challenges related to the healthcare services, physical environment and insufficient policy regulations that need to be addressed to promote the engagement and maintenance of healthy lifestyles. Thus, the consideration of a collectivist approach is key to promoting healthful lifestyles during the post cardiac event period. The novel insights this study have unveiled are fundamental to developing culturally sensitive interventions and resolving the underlying structures and mechanisms that can have the potential to shape behaviour change in CVD patients in Saudi Arabia. Healthcare providers need to understand the challenges related to the complex sociocultural norms and structural forces that make it difficult for them to change their behaviours. With such an understanding, they will have the capacity to enact healthy recommendations, whereby appropriate secondary prevention interventions and positive outcomes are more likely to follow. Further research could be best directed towards exploring the institutional and public policy levels in more detail by exploring healthcare

providers' and policy makers' views about promoting healthy lifestyles among this population.

Novelty

- This is the first qualitative study that has explored the barriers and facilitators to the adoption of healthy lifestyles from the perspectives of CVD patients themselves in Saudi Arabia.
- The study revealed that individuals' willingness to engage in healthy lifestyle is largely influenced by the religious beliefs, family values and sociocultural norms of the community where they live.
- The consideration of a collectivist approach in developing interventions is key to promoting healthful lifestyles of Saudis during the post cardiac event period.
- This study expands the current knowledge by embedding the findings within the social ecological model, to help inform the future development of a tailored lifestyle change intervention based on both theory and research evidence.

Table 1: Participants' characteristics

Demographic category	Sub-category	Number of participants
Gender	Male	13 (61.9%)
	female	8 (38.1%)
Age	30-40	1 (4.8%)
	41-50	4 (19%)
	51-60	7 (33.3%)
	61-70	6 (28.6%)
	>71	3 (14.3%)
Level of education	None	2 (9.5%)
	Less than high school	5 (23.8%)
	High school or equivalent	6 (28.6%)
	College graduate	8 (38.1%)
Marital Status	Single	1 (4.8%)
	Married	18 (85.7%)
	Divorced	2 (9.5%)
Source of income	Paid employment	8 (38.1%)

	Spouse/family friends	3 (14.3%)
	Retired	9 (42.8%)
	Other (family inheritance)	1 (4.8%)
Diagnosis	Myocardial Infarction	11 (57.1%)
	Unstable Angina	3 (14.3%)
	CABG	6 (28.6%)
Time since diagnosis	2 – 5 years	13 (61.9%)
	6 – 10 years	4 (19%)
	> 10 years	4 (19%)
Residence	Urban	18 (85.7%)
	Rural	3 (14.3%)

Conflict of interest:

None declared

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Data availability statement:

The data underlying this article cannot be shared publicly for the privacy of individuals that participated in the study. The data will be shared on reasonable request to the corresponding author.

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