



# Cardiac Specialists' Perspectives on Barriers to Cardiac Rehabilitation Referral and Participation in a Low-Resource Setting

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## ABSTRACT

**BACKGROUND:** Cardiac specialists are arguably the most influential providers in ensuring patients access cardiac rehabilitation (CR). Physician barriers to referral have been scantily investigated outside of high-income settings, and not qualitatively.

**AIM:** This study investigated cardiac specialists' perceptions of barriers and facilitators to patient CR participation in a low-resource setting, with a focus on referral.

**METHODS:** In this qualitative study, focus groups were conducted with conventional content analysis. Thirteen of 14 eligible cardiac specialists working in Yazd, Iran, participated in 1 or both focus groups ( $n = 9$  and  $n = 10$ , respectively). The recording of the first focus group was transcribed into a word file verbatim, and the accuracy of the content of all field notes and the transcripts was approved by the research team, which was then analyzed inductively. Following a similar process, saturation was achieved with the second focus group.

**RESULTS:** Four themes emerged: "physician factors," "center factors," "patient factors," and "cultural factors." Regarding "physician factors," most participants mentioned shortage of time. Regarding "center factors," most participants mentioned poor physician-patient-center coordination. In "patient factors," the subcategories that arose were socioeconomic challenges and clinical condition of the patients. "Cultural factors" related to lack of belief in behavioral/preventive medicine.

**CONCLUSIONS:** Barriers to CR referral and participation were multilevel, as in high-resource settings. However, relative recency of the introduction of CR in these settings seemed to cause great lack of awareness. Cultural beliefs may differ, and communication from CR programs to referring providers was a particular challenge in this setting.

**KEYWORDS:** Cardiac rehabilitation, health personnel, access to health care, qualitative study, focus group discussion

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## Introduction

Cardiovascular diseases (CVDs) are the most common cause of mortality in most countries of the world, including Iran, and a major cause of disability.<sup>1,2</sup> Secondary prevention can mitigate the disability induced by cardiac conditions. Cardiac rehabilitation (CR) applies a comprehensive approach to control risk factors and optimize long-term management.<sup>3</sup> CR participation results in significantly improved quality of life,<sup>4</sup> and reduced cardiac mortality and hospitalization,<sup>5</sup> all while reducing costs.<sup>6</sup> On the basis of robust evidence, CR is recommended for many cardiac indications.<sup>7</sup>

Despite its positive effects, CR is underutilized. Reviews of studies that are primarily in high-resource settings show approximately 45% of indicated patients are referred,<sup>8</sup> and of those, 40% enroll<sup>9</sup> and adhere to 70% of prescribed sessions.<sup>10</sup> CR utilization is assumed to be even lower in low-resource settings, given the many barriers to overcome.<sup>11</sup> The resource constraints heighten affordability issues (direct as well as indirect costs such as transportation) and the necessity for patients to work and hence not be available for CR during work hours. The degree of CR referral, enrolment, adherence, and completion is not known in Iran.<sup>11</sup> At our center, 6.9% of indicated



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patients enroll (referral rate unknown), and of those, 36% do not complete it.<sup>12</sup>

The multilevel reasons (health system, referring provider, program and patient levels) why CR is underutilized are well understood in high-resource, Western settings.<sup>13</sup> These include distance, low motivation, low health literacy, absence of an efficient referral system, deficient financial coverage, and weak encouragement of patients by referring providers. Indeed, physician referral is a necessary step for patients to access CR. However, there have only been a handful of studies investigating barriers and facilitators of referral by physicians outside of the developed/Western world,<sup>14-16</sup> where the epidemic of CVD is at its worst.<sup>2</sup> Therefore, for the first time, this study investigated qualitatively the perceptions of Iranian cardiologists and cardiac surgeons (cardiac specialists), arguably the most influential group of physicians in ensuring CR utilization, regarding barriers and facilitators of patients' CR referral and participation.

## Methodology

This study was carried out between November 2017 and April 2018, using qualitative method; focus groups were performed with inductive content analysis.<sup>17</sup> It was approved by the Committee of Ethics in Human Research at Shahid Sadoughi University of Medical Sciences (IR.SSU.MEDICINE.REC.1396.51). The research team consisted of a cardiologist (SMS), an MD-PhD experienced in focus groups and qualitative analysis (MM), the CR medical director (MG), and a nursing PhD with experience in focus group methodology and qualitative analysis (KN).

## Setting

This study was conducted in the Heart Center of Afshar Hospital in Yazd, central Iran; it is the only CR center in the province. This governmental center delivers specialized health care services for CVDs, from primary prevention to therapeutic and rehabilitative interventions. Approximately 6000 patients with ischemic heart disease are treated annually, of which 99% have health insurance coverage. Every year, more than 1500 coronary bypasses are performed at the Center.

Thirty percent of CR program costs are paid by patients, with the remainder covered by public health insurance<sup>12</sup>; the program can support some patients without insurance, too. The CR center has no parking lot. It is a 36-session program, with patients coming on site 3 days/week for 3 months. Almost 100% of program participants are inpatients from Heart Center of Afshar Hospital. The CR program treated approximately 167 patients (5102 patient-hours) in the year of study—ie, half the capacity of the center.

## Participants

All 14 cardiac specialists working at the center were included (there are 30 in Yazd). They had at least 2 years of experience treating cardiac patients. Given the goal of the study to understand both barriers and facilitators of CR participation, specialists were categorized as "frequent" or "infrequent" referrers, based on the number of patients they referred to CR over the previous year. The number of patients referred by each cardiac specialist in the year before the study ranged from 0 to 30, with a median of 8. The participants were categorized on the basis of whether they referred more or less than the median number of patients that year.

## Procedure

The specialists were formally invited to participate in the study by phone and mail, and provided informed written consent. At participants' convenience, the focus groups were held in the Afshar Heart Center, each lasting 90 minutes.

The focus group guide is shown in Supplemental Appendix 1; it was developed by the research team, based on a review of the literature and best practices for focus groups.<sup>18</sup> The focus groups were audio-recorded. One co-researcher (KN) took field notes, and another assistant (MG) recorded the main issues raised on a whiteboard; MG did not speak during the focus groups to avoid biasing the discussion, given her involvement with the CR program.

The research team decided to hold a second focus group 2 months later to validate preliminary coding and work toward saturation. All eligible specialists were invited to participate again.

## Data analysis

Data trustworthiness was established on the basis of evaluative criteria by Guba and Lincoln.<sup>19</sup> The first focus group was transcribed into a word file verbatim, and the accuracy of the content of all field notes and the transcripts was approved by the research team. After repeated review by MG and KN, they broke the content down into primary semantic codes that were compared together, and the similar codes were categorized into subcategories. Cross-comparisons resulted in distilled subcategories, which were finally extracted as the main themes. The data were analyzed with MAXQDA V.12 (MAXQDA: Qualitative Data Analysis Software. Berlin, VERBI GmbH; 2015). To ensure reflexivity and diminish potential bias of MG, 3 other researchers from the team contributed to content transcription and analysis (SMS, MM, and KN).

The coding results were presented to participants; the participants confirmed the results/coding and made no suggestions for changes. Thereafter, the extracted results underwent external audits using expert checking by MRV AND ME.

**Table 1.** Sociodemographic and occupational characteristics of the cardiac specialists participating in the focus group discussions.

PARTICIPANT NO.	SEX	AGE	SPECIALTY & SUBSPECIALTY	WORK EXPERIENCE IN THE CENTER (YEARS)	FOCUS GROUP DISCUSSION ATTENDANCE	WORK STATUS	CR REFERRAL PRACTICE
1	M	55	Heart, heart failure	11	1	Full-time	Frequent
2	M	75	Heart, interventional	25	1 & 2	Part-time	Frequent
3	M	51	Heart, interventional	12	1 & 2	Full-time	Infrequent
4	M	41	Heart, interventional	4	1 & 2	Full-time	Frequent
5	M	51	Cardiac surgeon	8	1	Full-time	Frequent
6	M	53	Heart, interventional	6	1 & 2	Full-time	Frequent
7	M	60	Heart, interventional	17	2	Full-time	Frequent
8	M	52	Heart, interventional	18	2	Full-time	Infrequent
9	F	38	Heart	4	2	Part-time	Infrequent
10	M	42	Heart, echocardiography	7	1 & 2	Full-time	Infrequent
11	M	39	Heart, electrophysiology	4	2	Full-time	Infrequent
12	M	43	Heart, interventional	7	1 & 2	Full-time	Infrequent
13	M	46	Heart, interventional	15	1	Full-time	Infrequent

Abbreviation: CR, cardiac rehabilitation.

Representative quotations elucidating the coding analysis were considered by the team.<sup>19</sup>

Analysis of the second focus group added little new information with no clear changes in the coding framework/tree, indicating data saturation.<sup>20</sup>

## Results

A total of 12 cardiologists and 2 heart surgeons participated. All 12 cardiologists and 1 surgeon participated in 1 or both of the focus groups (13/14); 8 cardiologists and 1 heart surgeon participated in the first session, and 10 cardiologists in the second session. The participants' characteristics and CR referral categorization are shown in Table 1; they were between 38 and 75 years old, and there was 1 woman.

A total of 90 merged and overlapped primary codes were obtained on analyzing transcripts. These codes were re-analyzed and classified into 31 subcategories. The analysis resulted in 10 main categories that, finally, resulted in 4 themes. Table 2 displays the categories, subcategories, and themes elucidated below (participant number, as per Table 1).

### Physician factors

*Physicians' shortage of time.* Most specialists referred to shortage of time in orienting and justifying the patients to attend CR as the most important barrier to patient referral. This included physicians' heavy workload, volume of patients, and forgetting referral due to other required advice:

We cannot introduce CR to patients in the short time of the patient visit; we can't do it for the numerous patients. (1)

Really, we are so busy that we can't do that, so, we forget it. (2)

*Insufficient awareness.* Insufficient awareness of CR and safety policies and procedures were other barriers to patient referral to CR. One reason was insufficient training of physicians during their medical education:

Because we haven't learned it fully, we forget it; or because there was no mention of CR in our cardiovascular studies or in the fellowship. CR should be taught just like other medical materials. (3)

*CR skepticism.* Insufficient belief in the effectiveness of CR was another barrier. Some cardiac specialists reported lack of confidence in the efficacy of the program, disbelief in its efficacy, and also the general perception that invasive acute intervention is more effective than CR:

Most physicians don't believe in it. Although we read in textbooks and references that CR is useful and effective, we practically think medicinal treatment is effective and non-medical treatment is placebo. (4)

An individual who opposes CR, in fact opposes the science; the effect of CR has been proved. Nobody can deny it. If someone does not refer the patient, they may have other reasons. (7)

### Center factors

*The physician-patient-center relationship.* Also, the main causes of lack of patient referral were lack of communication of patient information to the physician, low feedback and monitoring of physicians' performance by the center regarding

**Table 2.** Focus group themes regarding factors affecting participation in CR programs.

MAIN THEMES (4)	CATEGORIES (10)	SUBCATEGORIES (31)
Physician factors	Shortage of time	Insufficient encouragement of patients by physicians
		Heavy workload
		Forgetting referral due to high load of patients
	Insufficient awareness	Insufficient education of physicians during medical education
		Lack of familiarity with CR
		Lack of awareness of CR safety policies and procedures, and patient responsibility
		Lack of awareness regarding CR facilities and equipment available
	Skepticism of CR benefit	Lack of confidence in the efficacy of CR and disbelief in efficacy of treatment
		Perception invasive acute intervention more effective than CR
		CR recency in country precludes familiarity with effects
CR center factors	Relationship between CR center and physicians, patients, and the community	Lack of communication of patient information back to referring physician by CR program
		Lack of feedback and monitoring regarding physician rate of patient referral and enrollment
		Absence of an active patient referral and follow-up system
		Patient entrance into CR program without physician awareness
		Absence of awareness in the community of the existence of the center
		Lack of coordination among patient, physician, and CR center
	Necessity of a flexible program	Lack of congruence between CR program model and patient's needs
		Need for a standardized approach to allocate patients to tailored models (ie, setting, brief or standard program)
	Geographical location of the center	Absence of CR centers in various parts of the city
		Absence of a suitable parking lot
Patient factors	Socioeconomic challenges	Inability to pay CR costs
		Inability to pay indirect costs such as transportation
		Lack of time due to work obligations
		Lack of support by the family and community
	Patients' physical status	Complex clinical status
		Comorbidities
Cultural factors	Disbelief in behavioral/preventive medicine	Patients do not engage in heart-healthy lifestyle
		Focus on implementation of nonlifestyle secondary prevention recommendations, to the exclusion of CR
		Physician and patient preference to focus on acute treatment and medication rather than lifestyle for prevention and management
	Insufficient knowledge	Patients' disbelief in the efficacy of CR
		Patient's lack of awareness regarding medical supervision during exercise

Abbreviation: CR, cardiac rehabilitation.

patient referral, lack of an active follow-up system for patient referral, patients' entrance into the program without informing

physicians, lack of awareness in the community about the center, and lack of physician-patient-center coordination:

I think the treatment course is a cyclical path. If there is any deficiency in the cycle, treatment will not be completed. One part of this path is CR. CR has not progressed in the country as much as internal ward of heart and cardiac intervention, while CR may serve as secondary prevention. (5)

Another issue is provision of feedback by the CR center. They never let us know how many patients attended the center or know about their health status after completion of CR. It is necessary to design a follow-up form for us, too. (6)

*Need for a flexible program model to meet patients' needs.* Issues mentioned were “lack of congruence between CR program model and patients' needs,” and “the need for a standardized approach to allocate patients to tailored models (ie, setting, brief or standard program)”:

There are 36 CR sessions. When we tell the patients that they should attend this number of sessions, they may think that they are obliged to attend all the 36 sessions. It is better to modify this number and start with less-than-standard number of sessions; then, little by little it can be increased. We should tell them that it is better for them to attend more sessions. (10)

*Inappropriate location of the center.* Lack of suitable parking lot for patient's easy access to the center and the absence of other similar centers in various parts of the city were among other CR barriers:

Our local CR system is summarized in just one center with difficult access. There is a 7-8 km distance from other parts of the city to here. It takes much time to get here by one's own car or by a taxi. (6)

### *Patient factors*

*Socioeconomic challenges.* This included inability to pay CR costs, indirect costs (ie, transportation costs), and lack of time due to work obligations:

Another problem is the financial burden. Most of our patients are retired. When we want to refer them to CR, they moan that they don't have sufficient income as they are about to get retired. (3)

If the physician says to the patients that they ought to go to CR, they pay the cost in any possible way. (7)

*Patients' physical status.* A few participants referred to inappropriate clinical conditions of the patients, such as complex heart problems and comorbidities, as a barrier.

### *Cultural factors*

*Disbelief in behavioral/preventive medicine.* A number of physicians mentioned the following as barriers to patients' CR attendance: lack of prevention-centered life style, lack of due attention to CR in treating patients, and the preference for the culture of medicinal treatment by both patients and physicians, and lack of support by the family and the community:

If a patient turns to me and does not take Atorvastatin, this is very important for me; yet, I forget to ask them whether they have attended CR. If they say that they haven't attended CR, it is not important for me. (12)

*Insufficient health knowledge.* One factor was patient's disbelief in the efficacy of CR, and lack of awareness regarding medical supervision during exercise:

Belief, education, and culture are highly important. We obligatorily eat and drink, but we don't do exercises. We, as cardiologists, don't exercise regularly. The culture of CR, psychotherapy, and exercise has not been established in the community. (13)

## **Discussion**

Two focus groups with cardiologists in a low-resource setting elucidated the fundamental barriers to patient CR attendance. The most important cause of lack of patient CR attendance from the specialists' perspective was physician-related, which reflects the literature, but is likely a consequence of the sample being more cognizant of these barriers. Many of the issues raised were consistent with previous studies examining barriers in high-resource settings,<sup>13,21</sup> and with the few studies in low-resource settings.<sup>15,22</sup> Indeed, results echoed findings from the survey of cardiologists in Iran that lack of education resulted in insufficient understanding of what was available, the benefits of CR, and reimbursement of services.<sup>23</sup>

During the focus groups, many participants mentioned the importance of their encouragement for patients' CR attendance. In a review by Neubeck et al<sup>24</sup> of 34 qualitative studies investigating the factors affecting CR participation from patients' perspective, “lack of physician recommendation” was a key issue. Other studies, including those from the physician perspective, have highlighted the importance of their encouragement on CR attendance as well.<sup>13,25-27</sup> Moreover, the center where the study was undertaken is the main cardiac center in the southeast of Iran, so not only local, but nonlocal patients attend this center for treatment. In low-resource settings such as this, it is then important for cardiologists to advocate<sup>28</sup> for regional CR planning, including more capacity so they have spots to which they can refer their patients, as well as alternative models of delivery (eg, home-based, exploiting technology to optimize efficiency and hence increase capacity). Indeed, the cardiologists were very interested in referring their patients to more of a hybrid model, where patients would attend on site until safety was established, but then could be supported at home as per their preferences.<sup>28</sup>

The physicians were more likely to refer those who did not had some interesting differences in perspectives. The participants who were less likely to refer contended that lack of awareness and skepticism regarding the efficacy of the CR program were among the factors that influenced their referral. They insufficiently understood the program model, center facilities and equipment, procedures for risk assessment before initiation of the program, program standards, and costs, emphasizing the need for a stronger relationship between the CR center and

physicians. On the contrary, the physicians who more commonly referred were more likely to view center-level and patient factors as hindering CR participation.

In the qualitative study by Schopfer et al<sup>27</sup> on factors affecting CR attendance, lack of CR information during medical education was one of the barriers identified. This is important as a previous study by Dahhan showed that an increase in physician awareness was associated with increased referral (from 17.6% to 88.96%).<sup>29</sup> It appeared that the more recently graduated specialists in this study were more likely to refer their patients, likely reflecting their greater CR awareness. Indeed, a comprehensive review of CR barriers in low-resource settings recommended that CR be included in the educational curriculum for heart specialists.<sup>30</sup>

Physician concerns regarding the potential for adverse events during CR were also foremost. The insufficient information about the facilities and policies of the center likely contributes to this mostly unnecessary barrier. The CR center in this study has a 15-year history of care provision, with at least 40 000 patient-hours of CR delivery. There have been no incidents leading to cardiopulmonary resuscitation or myocardial infarction. Legally, in the case of adverse events, the responsibility rests on the shoulders of the CR center staff, not on the referring physician. Patients undergo assessment before any exercise sessions, and a physician is always present.<sup>12</sup>

One cause of lack of patient referral to CR by physicians was the lack of feedback by the center regarding the rate of CR attendance of patients referred, and the effect of the program on referred patients (ie, pre- and postprogram assessments, with change scores). Indeed, previous research has shown that audit and feedback can affect physician practice,<sup>31</sup> and has also established what information physicians would like from CR programs.<sup>32</sup> Often, patients themselves report their experiences to physicians, which can promote better referral, but these acute care providers may not see the patients again.

Barriers to referral in low-resource settings are generally consistent with those identified in high-resource settings, but barriers seemed to be greater however in these settings, and more difficult to overcome. For instance, physicians would be even shorter on time for CR encouragement, given higher patient caseloads, and patient resources for indirect participation costs would be even lower. Also, some barriers are particularly challenging in these settings, including that CR is so new that familiarity is lower, such that specialists seek more information from the CR center on the nature of the program itself, and the disposition of referred patients. There seemed to be also less infrastructure to support referral processes. Culturally, women would need reprieve from unpaid labor to participate, but support appeared low.

#### *Directions for future research*

It is recommended that future studies focus on assessing barriers and facilitators to participation in CR from the perspectives of patients, CR center personnel, as well as health care administrators and policy-makers. Moreover, these CR barriers and

facilitators should be examined both qualitatively and quantitatively, so that we can have a better understanding of the most important factors to multiple stakeholders. Indeed, there are now not only validated scales to assess referring provider barriers in ensuring their patients use of CR,<sup>33</sup> but also scales for patients<sup>25,34</sup> and health care administrators as well.<sup>35</sup>

After integration of all results, suitable strategies to overcome key barriers should be identified using evidence<sup>36</sup> and expert opinion. Implementation impact on CR utilization should be measured.

#### *Limitations of the study*

The participants of this study were physicians employed in the public sector at the Heart Center of Afshar Hospital in Yazd, Iran. Their opinions may be different from those of physicians employed at other institutions or in the private health care system, limiting generalizability. Second, the lead cardiologist of the institution was involved in leading the focus groups, potentially influencing participant willingness to raise some issues. Indeed, the participants raised no negative personal experiences with the center. However, many barriers were openly raised, suggesting participants felt free to raise all issues.

#### **Conclusion**

Barriers to referral in low-resource settings are generally consistent with those identified in high-resource settings, and operate at the system, provider, program, and patient levels. Barriers are greater, however, in these settings, and more difficult to overcome. Also, some barriers are particularly challenging in these settings, including that CR is so new that familiarity is lower, such that specialists seek more information from the CR center on the nature of the program itself, and the disposition of referred patients. Culturally, specialists and patients alike seem to greatly prioritize acute care over behavioral/preventive medicine, despite evidence of the benefits of both. Patients must be supported to self-manage their condition, so that their vascular health is optimized.

#### **Author Contributions**

All authors approve the final article and are accountable for the work; none have any conflicts of interest. MG-F conceived and carried out the work, and drafted the manuscript. SLG made substantial contributions to the design of the work and revising it critically for important intellectual content. MM, SMS, and KN were also involved in data collection and analysis. MH, HJ, MV, and JE made substantial contributions to the conception and interpretation of the work, and revised it critically for important intellectual content.

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## Supplemental Material

Supplemental material for this article is available online.

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