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ORIGINAL ARTICLE

# KNOWLEDGE, ATTITUDES, AND PRACTICES OF CARDIAC REHABILITATION AMONG INTERVENTIONAL CARDIOLOGISTS, CARDIAC SURGEONS, AND POST-GRADUATE CARDIOLOGY RESIDENTS IN LAHORE: A CROSS-SECTIONAL STUDY

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## ABSTRACT

Cardiac rehabilitation is a professionally organized and supervised training program that comprises multifarious and extensive non-pharmacological interventions for prophylaxis, to recover and enhance cardiovascular health as it develops the patient for a whole, vital, and active life under the limitations placed on him or her due to the cardiac condition. **Objective:** To determine the level of knowledge, attitudes and practices of cardiac rehabilitation among Interventional cardiologists, cardiac surgeons and post-graduate cardiology residents in Lahore. **Methods:** A descriptive cross-sectional study was conducted at private and government hospitals in Lahore where a Knowledge, Attitude, and Practices (KAP) questionnaire survey was distributed to 85 participants. Respondents were included in the study based on their designation of being interventional cardiologists, cardiac surgeons, and post-graduate cardiology residents. **Results:** Results showed that 43.5% of participants had good knowledge about CR and 40% had medium knowledge of its content. Data showed that attitude was positive in participants 51.8% agreed on enrolling stable post-ACS patients in CR and 63.5% supported the outpatient implementation of CR in the country. About practice, respondents were aware of referral but there was difficulty associated with CR referral which must be addressed by the health ministry as reported by 37.6% of respondents. 65.9% of participants stated many barriers were present such as lack of specialists, less knowledge, lack of motivation, cost care, and localization of center. **Conclusion:** Cardiac specialists have the knowledge and a positive attitude for referring patients for cardiac rehabilitation but there is presence of several barriers while referring cardiac patients mainly due to a shortfall of cardiac specialists, the inadequacy of knowledge, motivation, and cost of care of rehabilitation programs.

**Keywords:** Barriers, Cardiologists, Cardiac Rehabilitation, Cardiac Rehabilitation Knowledge, Practice, Referral.

## INTRODUCTION

Cardiovascular diseases (CVDs) include the type of disorders related to the heart, associated blood vessels, or both as well; this includes diseases such as cerebrovascular disease, peripheral arterial disease, congenital heart disease[1], pulmonary embolism, deep vein thrombosis[2], coronary heart

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peripheral arterial disease, congenital heart disease[1], pulmonary embolism, deep vein thrombosis[2], coronary heart disease, rheumatic heart disease[3], stroke, and myocardial infarction[4]. CVDs are the common cause of death globally both in developing and developed countries[5]. Cardiovascular diseases (CVD) caused the death of 17.7 million people in 2015[6] and caused 17.9 million people deaths in 2016[7], which accounts for 31% of global death as reported by the World Health Organization (WHO)[8]. It is expected that 23.6 million people will die annually by 2030 due to CVD[9]. During pre-hospitalization and post-hospitalization, cardiac rehabilitation encourages a vital part of patients suffering from cardiac diseases to improve their quality of life (QOL)[10].

Cardiac rehabilitation is a skillfully organized and administered training plan of action[11] that comprises multifaceted and broadly non-medicinal interventions for secondary prevention[12], rapid recovery, and enhancing cardiovascular health as it develops the rehabilitated for a whole, dynamic, and lively life under the limitations set on a patient according to the nature of the cardiac condition[13]. Exercise training forms a vital part of the rehabilitation program[14] for cardiac disease as it controls blood pressure, and serum lipid levels and enhances the cardiac functioning of the patient[15,16]. Typically, three phases of cardiac rehabilitation are employed, i.e., inpatient phase, outpatient phase, and independent maintenance phase[17] but some programs also consider the 4 phases of CR[18].

Cardiac Rehabilitation is an emerging field in developing countries like Pakistan due to its positive outcomes in CVD patients improving their quality of life, improvement in exercise capacity, weight, glucose tolerance, lipid level, and other psychosocial variables. There is also a subsequent decrease in hospital stay time, major cardiac events, and mortality. Not only this cardiac rehabilitation can also be administered for the secondary prevention of any cardiac event and development of cardiovascular disease in a healthy population.

## MATERIALS AND METHODS

The current study was a descriptive cross-sectional study with the primary objective to determine the level of knowledge, attitude, and practices of cardiac rehabilitation and the secondary objective to identify the barriers to approaching cardiac rehabilitation according to interventional cardiologists, cardiac surgeons, and post-graduate cardiology residents in Lahore. The sample size was 85 which was calculated on the supposition that the smallest necessary number of items in the questionnaire must be a sample-to-ratio of 5:1 for a reliable outcome[19].

All accessible cardiology departments of private and government hospitals in Lahore were approached. Participants who were interventional cardiologists, cardiac surgeons, and post-graduate cardiology residents in Lahore were included in the study with work experience equal to or higher than 2 years in the cardiac department. Those participants were not included who refused to take part in the study. Knowledge, Attitude, and Practices (KAP) questionnaire used by the former author was used[8]. The questionnaire comprises 17 items. The questionnaire encompasses 4 parts determining the knowledge, attitude, practices, and barrier to cardiac rehabilitation.

### Statistical Analysis

Data analysis was performed using the Software IBM Statistical Package for Social Sciences (SPSS v23). Frequency (%) was calculated for qualitative variables.

## RESULTS

In this study, a total of 85 participants were included, comprising 60 (70.6%) males and 25 (29.4%) females. Among the participants, 53 (62.4%) were affiliated with the Punjab Institute of Cardiology, 13 (15.3%) with Combined Military Hospital, 2 (2.4%) with Mayo Hospital, 4 (4.7%) with Ittefaq Hospital, 2 (2.4%) with Gulab Devi Hospital, 6 (7.1%) with Surgimed Hospital, 4 (4.7%) with Shalimar Hospital, and 1 (1.2%) with Gangaram Hospital. Regarding the participants' specialties, 16 (18.8%) were Interventional cardiologists, 22 (25.9%) were cardiac surgeons, and 47 (55.3%) were cardiology post-graduate residents. In terms of workplace settings, 58 (68.2%) were from

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Table 1 showed that out of 85 respondents, 3 (3.5%) reported they had very poor knowledge of cardiac rehabilitation, 10 (11.8%) had poor knowledge, 31 (36.5%) had medium knowledge, 37 (43.5%) had good knowledge of cardiac rehabilitation and 4 (4.7%) had excellent knowledge of cardiac rehabilitation. 5 (5.9%) reported they had very poor knowledge of cardiac rehabilitation content, 11 (12.9%) had poor knowledge of cardiac rehabilitation content, 34 (40.0%) had medium knowledge, 31 (36.5%) had a good level of knowledge, and 4 (4.7%) reported they had excellent knowledge of cardiac rehabilitation content.

The majority of participants (74.2%) are positive or neutral about enrolling stable post-ACS patients into CR. Only a small percentage (1.2%) holds a negative view. A significant majority (86.6%) of participants' express confidence in the efficacy of CR in Pakistan, with only a small percentage (3.5%) expressing doubts. A high percentage (88.2%) believes that having access to an outpatient CR center adds value in the country. Only a small proportion (4.7%) has reservations. The majority (90.6%) expects better outcomes with patients enrolled in CR, while only a small percentage (3.6%) holds a negative view as showed in table 2.

As shown in table 3, the majority of participants (88.2%) prefer initiating CR either in hospital settings or directly after hospital discharge. A small percentage (7.1%) would delay the referral, and 4.7% would not refer. The majority (65.9%) believes that all mentioned patient types are suitable for CR after hospital discharge. A significant majority (75.3%) perceives difficulty in referring patients for CR in the country. The majority (37.6%) believes that the Ministry of Health should take the first step to commence CR in the country. The most common response is to refer patients to CR 1–2 times per month (41.2%). A significant majority (60.0%) recommends starting a rehab program after hospital discharge.

**Table 1.** Knowledge about cardiac rehabilitation among participants

| Knowledge Statements | Responses | Frequency (%) |
|---|---|---|
| **Knowledge about Cardiac Rehabilitation(CR) level** | Very poor | 3 (3.5%) |
| | Poor | 10 (11.8%) |
| | Medium | 31 (36.5%) |
| | Good | 37 (43.5%) |
| | Excellent | 4 (4.7%) |
| **Knowledge about Cardiac Rehabilitation (CR) content** | Very poor | 5 (5.9%) |
| | Poor | 11 (12.9%) |
| | Medium | 34 (40.0%) |
| | Good | 31 (36.5%) |
| | Excellent | 4 (4.7%) |

**Table 2.** Attitude toward cardiac rehabilitation (CR) among participants

| Attitude Statements | Responses | Frequency (%) |
|---|---|---|
| **Do you think that a patient is stable post ACS could be enrolled into CR?** | Strongly agree | 19 (22.4%) |
| | Agree | 44 (51.8%) |
| | Neutral | 21 (24.7%) |
| | Disagree | 1 (1.2%) |
| | Strongly disagree | (0%) |
| **Do you think that CR in Pakistan could be efficacious?** | Strongly agree | 19 (22.4%) |
| | Agree | 54 (63.5%) |
| | Neutral | 9 (10.6%) |
| | Disagree | 3 (3.5%) |
| | Strongly Disagree | (0%) |
| **Do you consider that access for an outpatient CR center is an added value in the country?** | Strongly agree | 21 (24.7%) |
| | Agree | 54 (63.5%) |
| | Neutral | 6 (7.1%) |
| | Disagree | 3 (3.5%) |
| | Strongly disagree | 1 (1.2%) |
| **Do you consider that outcome will be better if patients are enrolled in a CR?** | Strongly agree | 31 (36.5%) |
| | Agree | 46 (54.1%) |
| | Neutral | 5 (5.9%) |
| | Disagree | 2 (2.4%) |
| | Strongly disagree | 1 (1.2%) |

**Table 3.** Practices about cardiac rehabilitation (CR) among participants

| Practice Statements | Responses | Frequency (%) |
|---|---|---|
| **When would you refer a patient to begin a CR?** | Starting in the hospital settings | 49 (57.6%) |
| | Directly after the hospital discharge | 26 (30.6%) |
| | 4 weeks or more after the discharge | 6 (7.1%) |
| | Would not refer | 4 (4.7%) |
| **What type of patients do you think are suitable for CR after hospital discharge?** | HF/CAD/Angina/ACS | 12 (14.1%) |
| | CABG | 12 (14.1%) |
| | Post valve surgery | 3 (3.5%) |
| | Pacemaker | 2 (2.4%) |
| | All of the above | 56 (65.9%) |
| **Would it be difficult in the country to refer patients for CR?** | Yes | 64 (75.3%) |
| | No | 21 (24.7%) |
| **Who should take the first step to commence CR in country?** | Insurance companies | 1 (1.2%) |
| | Professional caregivers | 26 (30.6%) |
| | Physicians | 9 (10.6%) |
| | Policymakers | 17 (20.0%) |
| | Ministry of Health | 32 (37.6%) |

| | | |
|---|---|---|
| **How frequently would you refer patients to CR if cardiac rehabilitation would have initiated?** | 3–5 times per month | 24 (28.2%) |
| | 3–5 times per week | 16 (18.8%) |
| | 1–2 times per month | 35 (41.2%) |
| | Once every 6 months | 9 (10.6%) |
| | Never | 1 (1.2%) |
| **After hospital discharge, physicians advise patients to:** | To do nothing, to be at rest | 6 (7.1%) |
| | To exercise a bit | 20 (23.5%) |
| | To go to a fitness club | 2 (2.4%) |
| | To take it easy | 6 (7.1%) |
| | To start a rehab program | 51 (60.0%) |

The results of table 4 showed that the majority of participants (88.2%) acknowledge the presence of barriers when referring patients to CR. This high percentage suggests that healthcare professionals recognize challenges in the process of recommending or facilitating cardiac rehabilitation for their patients. A relatively low percentage identifies a lack of specialists as a barrier. This suggests that, while present, it may not be a predominant concern. A substantial percentage (14.1%) recognizes a lack of knowledge as a barrier. This underscores the importance of education and awareness among healthcare professionals regarding CR. Lack of motivation, cost of care, and localization of the centers are identified barriers by a smaller percentage, indicating that they may be less prominent concerns among the surveyed professionals. A significant majority (65.9%) considers all listed factors as barriers, emphasizing the multifaceted nature of challenges faced in promoting and implementing CR.

**Table 4.** Barriers to approaching cardiac rehabilitation (CR) stated by participants

| Barriers to approaching cardiac rehabilitation | | Frequency (%) |
|---|---|---|
| **Presence of several barriers while referring patients to the CR** | Yes | 75 (88.2%) |
| | No | 10 (11.8%) |
| **Type of barriers experienced by physicians** | Lack of specialists | 9 (10.6%) |
| | Lack of knowledge | 12 (14.1%) |
| | Lack of motivation | 3 (3.5%) |
| | Cost of care | 2 (2.4%) |
| | Localization of the center | 3 (3.5%) |
| | All of the above | 56 (65.9%) |

## DISCUSSION

This study was the first of its nature to determine the level of knowledge, practices, and attitudes of cardiac rehabilitation among interventional cardiologists, cardiac surgeons, and post-graduate cardiology residents. According to the current study, 43.5% of participants had good knowledge of CR and 40% had medium knowledge of CR content. Data showed that attitude was positive in participants 51.8% agreed on enrolling stable post-ACS patients for CR and 63.5.% supported the outpatient implementation of CR in the country. About practice, respondents were aware of referral but there was difficulty associated with CR referral which must be addressed by the health ministry as reported by 37.6% of respondents. 95.3% of participants supported inpatient and 96.5%

outpatient CR. 65.9% of participants stated many barriers were present such as lack of specialists, less knowledge, lack of motivation, cost care, and localization of center.

Current results found 43.5% had a good level of knowledge but a study conducted in Lebanon in which a questionnaire was given to cardiologists and cardiac surgeons where found 39.9% of participants had a medium level of knowledge 8. Concerning attitude, the current study showed that 63.5% of participants agreed on the effectiveness of CR in our country but according to a study conducted in Lebanon, it was 51.8%[8]. Current study found that 75.3% of participants stated it was difficult to refer patients for CR but in a study conducted in Lebanon 65.1% agreed on it[8]. The same study found a positive attitude regarding the effectiveness and outpatient support of CR. Their study also revealed that 60.5% of participants reported many cardiac rehabilitation barriers were confronted by cardiologists[8].

A study conducted in Iraq investigated the knowledge and attitude of medical and paramedical staff about cardiac rehabilitation. 200 participants were included as 33 were medical staff members and 167 were paramedical staff members. According to their results, 21.0% had good knowledge of CR while 49.0% had poor knowledge. Moreover, 53.0% had a fair attitude toward the CR program[2]. In the current study, knowledge was found to be good but it is inconsistent with the study conducted in Iraq where the knowledge was poor about CR but the attitude was fair 2 and the current study showed that interventional cardiologists, cardiac surgeons, and post-graduate cardiologist resident had a good attitude for CR.

There is another study conducted in 2018 in India to evaluate the knowledge, awareness, and practice among cardiologists about CR. An online survey was distributed, and only 285 cardiologists completed the survey. They found a poor level of knowledge as only 3.9% of participants answered correctly about the management of CVD. Low socioeconomic status and lack of patient willingness was the reason behind only 20-30% of referral by cardiologists for cardiac rehabilitation. The most commonly identified barrier was the lack of patient interest in the CR referral[22].

Refusal of private hospitals for the data collection was one of the limitation. Majorly participants were cardiology residents who had lesser experience than cardiac specialists who had greater deal of clinical expertise. Study was descriptive cross sectional due to which no cause-effect could be drawn. Self-selection bias of respondents due to their interest in CR and few questions were perceived theoretical because CR is less practiced in Pakistan due to lack of funds. Current study suggests that seminars and educations programs must be oriented for the future increase in patient referral rate, knowledge and awareness of CR. Implementing CR will turn down percentage of mortality annually nationwide. Future researchers are suggested to study the effects of cardiac rehabilitation post cardiac surgery and prophylactic effects of cardiac rehabilitation for primary prevention of CVD.

## CONCLUSION

As demonstrated by current study results, interventional cardiologists, cardiac surgeons, and post-graduate cardiology residents have varying knowledge and positive attitude toward referring patients for cardiac rehabilitation but there is existence of many barriers to referring patients due to a shortfall of cardiac specialists, inadequacy of knowledge, motivation and cost care of rehabilitation program.

## DECLARATION

**Conflict of interest:** The author declared no conflict of interest.

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