KNOWLEDGE ATTITUDE AND PRACTICE SURVEY RELATED TO CARDIOPULMONARY REHABILITATION EXERCISES AMONG CARDIOLOGISTS

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ABSTRACT

Background: One of the leading causes of death worldwide is cardiovascular disease. Cardiopulmonary rehabilitation programs offer a number of advantages, but they are not widely used worldwide**.**

This study's goal is to identify the barriers to referring patients to cardiopulmonary rehabilitation programs among cardiologists, as well their knowledge, attitudes, and practices in this area.

Methodology: Through non-probability convenient sampling, a survey study was carried out among 147 cardiologists from hospitals in the Gujranwala division. Included were on-call physicians, professors, assistant professors, and department heads. A questionnaire that has been previously validated by research was used to collect data. IBM SPSS software version 24 was used to enter and process the data. Correlation test was used to see whether there was a correlation between the qualitative data, and a probability value of 0.05 was value of the maximum.

Results: Out of 147 cardiologists included, 36 (24.5%) fell into the under-35 category, 88 (59.9%) under 35–40 category, 20 (13.6%) under 40–55 category, and 3 (2.0%) under 55–60 category. Only 12 (or 8.2%) of the participants have good understanding of CR level and content, whereas 7 (4.8) have weak knowledge, 126 (87.1) have medium knowledge, and 7 (4.8) have poor knowledge. Additionally, 84.35 percent of cardiologists believe there are hurdles, while 15.65 percent disagree.

Conclusion: Despite their good attitudes and strong conduct, cardiologists lack understanding regarding CR level and content, and there are barriers that contribute to the low referral rate.

Keywords: *Cardiologists, knowledge, attitude, practice*

INTRODUCTION

Severe illnesses, such as heart events, malignancy, severe lung sickness, and mellitus, are the top contributors to death overall. In 2008[1)], this accounted for 63% of global deaths1. Cardiovascular disease (CVD) comprises high blood pressure, ischemic stroke, plaque, tachycardia and diverticular disease, pulmonary embolism, and hemorrhage, and it impact fatality, disability, and ailments differently in diverse regions.

Hypertension, myocardial infarction, atherosclerosis, arrhythmia and valvular heart disease, coagulation disorders, and stroke are collectively known as cardiovascular disease (CVD) and mortality, morbidity, and disease in different countries. Diseases related to the human circulatory system Known as cardiovascular disease (CVD). CVD is Pakistan's major health problems and number of patients. It increases every day. By cardiovascular disease about 16.7 million people died with 17 million people in 2000 and 2008, with more causalities in females[2)].

Cardiac rehabilitation (CR) is a comprehensive program that helps patients lead a complete, vibrant and lively life within the limits imposed by heart disease, with far less time than that in recent times, by over 50 percent. The method of restoring a person to their desirable body, cognitive, social, behavioral, and economical state is called as telerehabilitation[3)].

Despite the benefits and recommendations for clinical practice that individuals with cardiovascular disease be referred. CR is not used enough. There are many reasons why people with cardiac disease are unable to get admission to rehabilitation program, including issues with the health service, health professionals, and client issues (like cost and location). The absence of a doctor's prescription is among the most crucial elements. This may be the result of inadequate CR understanding or attention. In reality, a few research have looked into physician recommendation patterns and associated obstacles[4)].

Undoubtedly, cardiologists have the greatest impact on patients' participation to rehabilitation. Other than high-income environments, few other obstacles to physician recommendations arise and never massively examined. CR is not used entirely. According to a review of studies mostly carried out in increased resource countries, about 45percent who presented were sent, 40% participants took part, while 70% adhered to the sessions that were recommended[5)].

Cardiac rehabilitation **is** clinically proven Effective as secondary prevention after myocardial Infarction (MI) in developed countries. Aiming for improvement leading to changes in the

patient's physical, psychological and social well-being and behavior, disease progression and risk of future events. Heart Rehabilitation Programs usually include several complementary interventions, including exercise dietary and nutritional advice, psychological care, education on risk factors and medication compliance[6].

Rehabilitation includes treating patients for problems such as congestive heart failure, congenital heart disease, and other conditions in addition to treating those with ischemic heart disease. Clinical treatment has undergone significant developments, and new approaches, such as elective medication and reciprocal consideration, are being used. The profession of rehabilitation medicine should have been able to include new surgical techniques that help restore heart function, as well as other advancements in the field of surgery that have been made[7].

From the results of study it is highly recommended to meet the barriers existing in referring patients to CR. Government should take initiative and start funding to promote CR by providing centers and other needs that are necessary. Also it is recommended that there should be training and education of cardiologists by arranging workshops and also there should be education of patient by guiding them about CR content and benefits properly.

The aim of this study is to determine the knowledge, attitudes and practices of cardiologists in the Gujranwala Division of Pakistan regarding CR. Specifically, this study evaluates discharge treatment recommendations for patients with cardiopulmonary disease. It also identifies the greatest obstacles faced by cardiologists and cardiac surgeons when referencing patients for CPR.

METHODOLOGY

This is a Cross Sectional Survey Study. Data were collected from different hospitals (Private and Government) of Gujranwala division (DHQ Gujranwala, Med care, Al-Razi hospital, Jinnah Hospital, Central Hospital, DHQ Gujrat, THQ Wazirabad, and THQ Kharian and the study duration is 4 Months. Sample size is 147 which is calculated by following formula:

$N=(Z\alpha/_2)^2.P.(1-P)/d^2$ where, n= Sample size which is 147 cardiologists, d= 0.05 which is absolute error or precision, p= proposed prevalence of variable (anticipated population proportion) 0.31, 1- α= confidence level % 95, Z_{1-} α/2= 1.96 is standard normal variant at 5% type 1 error and 95% confidence level and the symbol ^ means 'to the power of'; * means 'multiplied by non- probability convenient sampling technique is used. The doctors on duty during the time of data collection, assistant professors, professors, and heads of

departments[8]were included and doctors in operation theaters and emergency departments to prevent any inconvenience and doctors who are not willing to participate[8] were excluded.

RESULTS

In this study total participants were 147 among these 142 (96.6) were males. out of total 36 (24.5) were between <35 category, 88 (59.9) were between 35-40 category, 20 (13.6) were between 40-55 category and 3 (2.0) were between 55-60 category, 120 (81.6%) were cardiologists, 15 (10.2%) were cardiac surgeons and 12 (8.2%) were cardiology fellows, 147, 39 (26.5%) cardiologists have <5 year of practice, 78 (53.1%) have 6-10 years of practice, 7 (4.8%) have 11-15 years of practice and 23 (15.6%) have >15 years of practice.

Table 1. Socio demographic characteristics

Variables	Categories	n	%
Gender of Participant	Female	5	3.4
	Male	142	96.6
Age Group (years)	<35	36	24.5
	35-40	88	59.9
	40-55	20	13.6
	55-60	3	2
Function of Participant	cardiologist	120	81.6
	cardiac surgeon	15	10.2
	cardiology fellow	12	8.2
Education of participant	Pakistan	138	93.9
	US	4	2.7
	EU	2	1.4
	others	3	2
Work Location	Urban	143	97.3
	Both	4	2.7
Place of Graduation	Pakistan	144	98
	others	3	2
Office Location	hospital settings	33	22.4
	private office	47	32
	both	67	45.6
No of Years practice	<5	39	26.5
	5-10	78	53.1
	10-15	7	4.8
	>15	23	15.6
Total		147	100

The results of study showed that only 12 (8.2%) of the 147 cardiologists have excellent knowledge about cardiac rehabilitation (CR) and content, while 128 (87.10%) have medium level and 7(4.8%) cardiologists have poor knowledge about CR content that is shown in ***table 2.***

Table2. Knowledge about Cardiac Rehabilitation among cardiologists

KNOWLEDGE		n	%	Chi Square	P-value
knowledge about CR level	poor	7	4.8	191.31	<0.001*
	medium	128	87.1		
	good	12	8.2		
knowledge about CR content	poor	7	4.8	191.31	<0.001*
	medium	128	87.1		
	good	12	8.2		
Total		147	100		

"*" indicates the statistical significance difference

Out of 147 cardiologists, 18 (12.2%) strongly agree, 113 (76.9%) agree, 14 (9.5%) neutral, 1(0.7) disagree for enrollment of post ACS in CR. 147 cardiologists believe that CR may be helpful in Pakistan, with 97 (66.0%) strongly agreeing, 40 (27.2%) agreeing, and 10 (6.8%) having a neutral opinion. 94 (63.9%) were strongly agree, 37 (25.2%) were agree and 16 (10.9%) were neutral about that access for an outpatient CR is an added value in the country. 111 (75.5%) were strongly agree, 29 (19.7%) were agree and 7 (4.8%) were neutral about that the outcome will be improved if your patients are enrolled in a CR.

Results reveals that 75 (51%) cardiologists were referred beginning in hospital settings, 50 (34%) were referred immediately after the hospital release, and 22 (15%) were referred 4 weeks or more after hospital discharge. 45 (30.6%) thought HF/CAD/Angina/ACS patients were suitable for CR, 1 (0.7%) thought post-valve surgery patients were suitable, 15 (10.15%) thought patients with pacemakers were suitable, 3 (2.0%) thought post-vascular surgery patients were suitable, and 83 (56.5%) thought they were suitable. The statistic displays the proportion of cardiologists in the nation that believe it would be challenging to recommend patients to CR. 147 cardiologists were surveyed; 37 (25.17%) agreed and 110 (74.8%) disagreed. Cardiologists' recommendations for people in the nation who should start CR, among 147 respondents, 14 (9.52%) identified themselves as professional carers, 22 (15.0%) as doctors, 10 (6.8%) as policymakers, and 101 (68.7%) as ministry of health.

Table.3: Attitude of cardiologists towards cardiopulmonary rehabilitation programs

Attitude		n	%	Chi-Square	P value
Do you believe a patient who has had ACS and is stable might be enrolled in a CR?	strongly agree	18	12.2	305.07	<0.001*
	agree	113	76.9		
	neutral	14	9.5		
	strongly disagree	1	0.7		
	disagree	1	0.7		
Do you believe CR in Pakistan has a chance of becoming successful?	strongly agree	97	66	79.71	<0.001*
	agree	40	27.2		
	neutral	10	6.8		
Do you consider that access for an outpatient CR center is an added value in the country?	strongly agree	94	63.9	66.49	<0.001*
	agree	37	25.2		
	neutral	16	10.9		
Do you believe that enrolling your patients in a CR will enhance the outcome?	strongly agree	111	75.5	66.49	<0.001*
	agree	29	19.7		
	neutral	7	4.8		
Total		147	100		

"*" indicates the statistical significant difference

Our results for how frequently cardiologists send patients to rehab program if it would have started out of 147 cardiologists are, 74 (50.3%) said 3-4 times per month, 51 (34.7%) said 3-4 times per week, 17 (11.6%) said 1-2 times per month and 5 (3.4%) said once in a six month. It also shows the percentage of what cardiologists asked patients to do after discharge. Out of 147 cardiologists 4(2.72%) said to do nothing and to be at rest, 13(8.8%) said to exercise a bit and 130(88.4%) said to start a rehab program.

Table.4 Practices of cardiopulmonary rehabilitation programs among cardiologists

PRACTICES		n	%	Chi-Square	P value
When should a patient be referred to begin	Starting in hospital settings	75	51	28.69	<0.001*
	Directly after hospital discharge	50	34		

a CR?	4 weeks or more after hospital discharge	22	15		
What kind of patients do you think are appropriate for CR after leaving the hospital?	HF/CAD/Angina/ACS	45	30.6	164.19	<0.001*
	Post valve surgery	1	0.7		
	Pacemaker	15	10.2		
	Post vascular surgery	3	2		
	All of above	83	56.5		
Who should take the lead in starting CR across the nation?	Professional caregivers	14	9.5	36.25	<0.001*
	Physicians	22	15		
	Policy makers	10	6.8		
	Ministry of health	101	68.7		
How often would you have sent people to CR if it had already begun?	3-5 times per month	74	50.3	151.8	<0.001*
	3-5 times per week	51	34.7		
	1-2 times per month	17	11.6		
	once in a six month	5	3.4		
Following discharge, doctors instructed patients to:	To do nothing, to be at rest	4	2.7	81.32	<0.001*
	To Exercise a bit	13	8.8		
	To start a rehab program	130	88.4		
Total		147	100		

Table.5 this table shows the percentage of existence of barriers in referring patients to CR

BARRIERS		**n**	**%**	**Chi-Square**	**P value**
Existence of barriers to refer patients to the CR	No	23	15.6	69.39	<0.001*
	yes	124	84.4		
Kind of barriers faced by physicians	lack of specialists	5	3.4	422.49	<0.001*
	lack of knowledge	8	5.4		
	cost of care	2	1.4		
	localization of center	3	2		
	all of above	129	87.8		
Total		147	100		

The percentage of existence of barriers in referring patients to CR according to results is that 84.35% cardiologists said there are barriers and 15.65% there are no barriers and the kind of barriers faced by cardiologists in referring patients to CR is, 5(3.40%) said lack of specialists, 8(5.4%) said lack of knowledge, 2(1.3%) said cost of care, 3(2.0%) said localization of center and 129(87.7%) said all of above barriers. According to results it shows that 84.35% cardiologists said there are barriers and 15.65% said there are no barriers in referring patients.

DISCUSSIONS

The study was conducted on 147 cardiologists from different hospitals in Gujranwala division of Pakistan. The main aim of this study is to evaluate the knowledge attitude and practices of cardiopulmonary rehabilitation programs among cardiologists. Despite the dearth of comprehensive CR programs in the nation, our results show that doctors are at least somewhat familiar with CR and its contents. Cardiologists only had good understanding in 8.2% of cases, and medium knowledge in 87.1% of cases.

The significant majority of participants enthusiastically endorsed CR and acknowledged both its value addition and the successful outcomes of CR. Nearly all participants stated that there are hurdles and that recommending a patient to CR is difficult in their field of employment. According to our findings, referral hurdles exist for cardiologists (84.3%). It was crucial to ascertain the kind of impediments respondents believed existed for CR as well as their opinions and suggestions for how to enhance CR programs.

Our data indicate that participants' awareness of CR is on the medium level. My findings are consistent with one study by a researcher in Lebanon, which likewise comes to the conclusion that participants in the inpatient and outpatient departments lack awareness of CR, particularly about its content[9].

In 2022, a pilot study will be done. It reports that 16 residents (80%) completed the pre- and post-surveys, and 13 (81%) claimed they had no education about CR the year before. Increases in insurance coverage (2.4 against 5.6, P = 0.001), mean aggregate knowledge scores on CR components (5.1 versus 7.0, P = 0.001), and eligible diagnoses (7.1 contrasted to 9.9) were also seen after education. Following education, attitudes about CR also improved, particularly with regard to perceived ease of explaining CR to patients (4.00 compared to 2.18, P0.001) and self-reported degree of comfort (3.69 versus 2.06). Before and after education, the number of CR referrals increased during a 2-month period from 0% (0 out of 10 eligible patients) to 33percent (3 out of 9)[10].

In India there is another study conducted which also supports this study results which shows that they lack the knowledge of CR contents and guidelines although being aware of its significance for secondary prevention and great outcomes[11].

This study concludes that the main reason that CR is underutilized is that there are many barriers including lack of specialists, motivation, education, cost and centers. Our results are in line with the study conducted by R. Farah which concludes that barriers will exist for cardiologists who want to refer patients to CR programs. Governmental and insurance policies must cover CR especially now, during a pandemic[12].

Our findings were also validated by a Saudi investigation. They discovered that there are three primary barriers to establishing CR: the lack of an adequate CR (96%), healthcare professionals' ignorance of the entire CR stages and its benefits (95%), and the dearth of healthcare professionals with CR training (94%). 48 This is perfectly in accordance with the findings of this survey, which found that there are challenges including (87.7%) overall above hurdles, (1.3%) cost of care, (2.0%) localization of center, (3.40%) shortage of experts, (5.4%) lack of expertise, and (1.3%) cost of care[13].

According to our study, practices of cardiologists among CR are not good and it is lacking. (50.3%) cardiologists refers patients 3-5 times per month and (34.7%) refers patients 3-5 times per week despite of their support and awareness is because of existence of barriers specially cost. My results are in line with the study that also concludes that 14 LMICs lacked access to CR services. The most frequently cited obstacles to the successful implementation of CR programs were a lack of financial resources, a lack of qualified personnel, a lack of equipment, and the fact that health policies do not support rehabilitation. Patient education, smoking cessation, medication and nutrition counseling, according to cardiac professionals, are effective strategies for long-term CR in these nations.

The limitations to this study are the sample size which is through non probability sampling, short period of study and the busy schedule of cardiologists.

CONCLUSION

Overall this study conducted that cardiologists have medium (87.1%) knowledge and only (8.2%) cardiologists have good knowledge about CR content and level despite the strong support and awareness regarding CR. This study concludes that cardiologists also had good attitude towards CR but they were lacking in referring and practice because of existence of barriers like lack of specialists, costs, localizations of centers, lack of patient's motivation to adhere the program.

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REFERENCES

1. Hwang R, Bruning J, Morris N, Mandrusiak A, Russell T. A systematic review of the effects of telerehabilitation in patients with cardiopulmonary diseases. Journal of cardiopulmonary rehabilitation and prevention 2015;35:380-9.
2. Zubair F, Nawaz SK, Nawaz A, Nangyal H, Amjad N, Khan MS. Prevalence of cardiovascular diseases in Punjab, Pakistan: a cross-sectional study. Journal of Public Health 2018;26:523-9.
3. Farah R, Groot W, Pavlova M. Knowledge, attitudes, and practices of cardiopulmonary rehabilitation among physiotherapists in Lebanon. Bulletin of Faculty of Physical Therapy 2022;27:1-8.
4. Buttar HS, Li T, Ravi N. Prevention of cardiovascular diseases: Role of exercise, dietary interventions, obesity and smoking cessation. Experimental & clinical cardiology 2005;10:229.
5. Ghanbari-Firoozabadi M, Mirzaei M, Nasiriani K, et al. Cardiac specialists' perspectives on barriers to cardiac rehabilitation referral and participation in a low-resource setting. Rehabilitation process and outcome 2020;9:1179572720936648.
6. Ul-Haq Z, Khan D, Hisam A, et al. Effectiveness of cardiac rehabilitation on health-related quality of life in patients with myocardial infarction in Pakistan. J Coll Physicians Surg Pak 2019;29:803-9.
7. Bartels MN, Whiteson JH, Alba AS, Kim H. Cardiopulmonary rehabilitation and cancer rehabilitation. 1. Cardiac rehabilitation review. Archives of Physical Medicine and Rehabilitation 2006;87:46-56.
8. Majid A, Jamali M, Ashrafi MM, et al. Knowledge and attitude towards cardiopulmonary resuscitation among doctors of a tertiary care hospital in karachi. Cureus 2019;11.
9. Farah R, Groot W, Pavlova M. Knowledge, attitudes and practices survey of cardiac rehabilitation among cardiologists and cardiac surgeons in Lebanon. The Egyptian Heart Journal 2021;73:1-9.
10. Wang M, Torosyan N, Bairey-Merz CN, Wei J, Shufelt CL. Internal medicine resident education improves cardiac rehabilitation knowledge, attitudes, and referral rates: A pilot study. American Journal of Preventive Cardiology 2022;10:100349.
11. de Melo Ghisi GL, Contractor A, Abhyankar M, Syed A, Grace SL. Cardiac rehabilitation knowledge, awareness, and practice among cardiologists in India. Indian heart journal 2018;70:753-5.
12. Farah R, Groot W, Pavlova M. Barriers to cardiac rehabilitation: a first national survey. European Heart Journal 2021;42:ehab724. 3033.
13. Khushhal A, Alsubaiei M. Barriers to establishing outpatient cardiac rehabilitation in the western region of Saudi Arabia: A cross sectional study. 2022.

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