

CARDIAC REHABILITATION KNOWLEDGE AMONG CORONARY ARTERY DISEASE PATIENTS ATTENDING A TERTIARY LEVEL HOSPITAL, BHARATPUR***Dr. Rosy Shrestha, Jaya Prasad Singh, Dr. Kshitiz Shrestha and Sirjana Shrestha**¹Associate Professor School of Nursing Chitwan Medical College, Bharatpur, Nepal.²Assistant Professor Community Medicine Chitwan Medical College, Bharatpur, Nepal.³Medical Officer Emergency Department Chitwan Medical College, Bharatpur, Nepal.⁴Lecturer College of Medical Science, Bharatpur, Nepal.***Corresponding Author: Dr. Rosy Shrestha**

Associate Professor School of Nursing Chitwan Medical College, Bharatpur, Nepal.

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ABSTRACT

Introduction: Coronary artery disease (CAD) is a leading cause of disease burden worldwide. Having Knowledge of the CAD can be considered as the first step to reduce the risk of cardiac complication. Referral to cardiac rehabilitation center (CR) has proved to be effective in improving functional capacity and quality of life. Therefore, the aim of this study was to explore the knowledge regarding CR in patients with CAD attending a tertiary level hospital at Bharatpur, Nepal. **Methods:** A descriptive cross sectional study design was used to examine 85 CAD patients attending cardiac out-patient departments of Chitwan Medical College and Teaching Hospital, Bharatpur, Nepal. Non-probability, consecutive sampling technique was used for data collection by face to face interview method by using a standard tool, namely CADE-Q. Data was analyzed. **Results:** Of all 85 respondents mean age was 56.95 ± 15 years. The highest scores of knowledge on CR were in prescription for physical activity based on stress test and persons' abilities and disabilities (42.4%) and lowest in optimal target value of HDL and LDL cholesterol (2.4%). Level of knowledge was found less than 70%, as 3.5% scored acceptable, 52.9% poor and 43.6% insufficient. **Conclusion:** The knowledge regarding Cardiac Rehabilitation programs among CAD patients in Bharatpur were found to be sub-optimal. Hence, it is strongly recommended that nurses should frequently organize educational intervention programs on CR and subsequently emphasize on establishing cardiac rehabilitation centers in every tertiary level hospital so as to improve the knowledge on CR among CAD patients.

KEYWORDS: Knowledge, Cardiac Rehabilitation, Coronary artery disease.**INTRODUCTION**

Cardiovascular disease (CVD) is one of the leading cause of death globally, taking an estimated 17.9 million lives or 31% of all deaths according to the world health statistics (2018),^[1] these deaths will increase to 23.4 million worldwide in 2030.^[2] Coronary artery disease (CAD) is the most common among CVD. Nowadays it is gradually emerging as the first cause of morbidity and mortality in Low middle income countries (LMICs) like Nepal. The prevalence of CAD in eastern Nepal is 6.0%.^[3] Cardiac rehabilitation (CR) has emerged as a part of total patients care among them. It is increasingly being recognized that post heart events care is more effective only if delivered with proper rehabilitation backup to enhance the speed of recovery and quality of life.^[4] It encompasses of health talk and education and counseling services in order to increase physical fitness among heart patients, lessen cardiac symptoms, improve health and decrease the risk of future heart problems, including heart attack.^[5] Patients with CAD can be benefitted from CR program (CRP),^[6] and effects of

educational intervention as well as the potential changes in their attitudes measured by Coronary Artery Disease Education Questionnaire (CADE-Q) to assess CR patients' level of knowledge of topics related to CAD and CR.^[7,8] If CAD patient adopt healthy behaviour pattern then it improves quality of life, maximizes the well-being of individuals and of society in general. In this regard, CAD patient has to avoid risky behaviour patterns such as smoking, tobacco use, alcohol consumption, wrong eating habits and inactivity, in order to increase the existing behaviours of the individual to highest level.^[9,10]

Therefore this study was conducted with the purpose of investigating knowledge about cardiac rehabilitation among CAD patients attending a tertiary level hospital at Bharatpur, Nepal.

METHODS

This was a cross-sectional study design to examine 85 CAD (angina pectoris, myocardial infarction and

ischemic heart failure) patients attending outdoor department of Chitwan Medical College and Teaching Hospital (CMC-TH), Bharatpur, Nepal, a tertiary level hospital, 750 bedded largest teaching hospital in Chitwan District, Nepal. Non-probability, consecutive sampling technique was used with clinically diagnosed CAD patients. Data was collected by using semi-structured questionnaire consisting of four sections such as socio-demographic (total items-9) and disease related characteristics (total items-4), behaviour patterns (total items-6), and CADE-Q (total items-19). These topics include (1) pathophysiology and signs and symptoms of the disease; (2) risk factors and lifestyle; (3) diagnosis, treatment, and medication; and (4) physical exercise. Each item has 4 alternatives or statements that correspond to a knowledge level: a correct statement showing "complete knowledge;" a correct statement showing "incomplete knowledge;" an incorrect statement showing "wrong knowledge;" and a "do not know" statement showing a "lack of knowledge." Each alternative is scored as follows: 3 = complete knowledge; 1 = incomplete knowledge; and 0 = wrong knowledge or "do not know." The sum of the final scores leads to a mean total knowledge (maximum of 57 points), which classifies into five level such as great (90-100%), good (70-89%), acceptable (50-69%), poor (30-49%), and insufficient (<30%) about knowledge about coronary disease and CR.^[11] The instrument was pretested and

internal consistency of this tool was assessed using Cronbach α ($r= 0.82$). Data was collected in month of November, 2019 by using face to face interview method, it takes around 20 minutes to complete. Prior to data collection, the study was approved by the Institutional Review Committee (IRC) CMC-TH for the protection of human subjects. The participants were informed about the purpose of the study. In addition to this, they were also informed that responses would be kept confidential, and they would have the right to withdraw from the study at any time.

Data was analyzed using Statistical Package for the Social Sciences (SPSS) version 16.0. Descriptive (Percentage, frequency, mean and standard deviation) and cross tab were used to find out association between level of knowledge and selected variables of the respondents. During cross tabulation, poor and insufficient knowledge were merged and used as non-acceptable level of knowledge.

RESULTS

Table 1 shows that the majority of the respondents were older aged (43.5%), male (52.9%), resided in urban (64.7%), living single (50.6%), Brahmin/Chhetri (52.9%), Hindu (78.8%), nuclear family (57.6), literate (54.1), and housework (42.4).

Table 1: Socio-Demographic Characteristics of the Respondents n=85.

Variables	Frequency(Percent)
Age group (in years)	
Adulthood(21-40)	13 (15.3)
Middle age(41-60)	35(41.2)
Old aged(≥ 61)	37(43.5)
<i>Mean age \pm SD= 56.95\pm15; Min =15 & Max 91 years</i>	
Sex	
Male	45(52.9)
Female	40(47.1)
Place of Residence	
Rural	30(35.3)
Urban	55(64.7)
Living Status	
Living with family	42(49.4)
Living single*	43(50.6)
Ethnicity	
Brahmin/Chhetri	45(52.9)
Janajati	26(30.6)
Dalit	8(9.4)
Others	6(7.1)
Religion	
Hindu	67(78.8)
Non-Hindu	18(21.2)
Type of Family	
Nuclear	49(57.6)
Joint	36(42.4)
Education	
Literate	46(54.1)
Illiterate	39(45.9)
Occupation**	
Agriculture	26(30.6)
Housework	36(42.4)
Service	10(11.8)
Business	13(15.2)

* Included unmarried, divorced, widower/widow; **Included household activities like cooking, washing, cleaning, etc but do not earn money.

Table 2 shows that the disease related characteristics of the respondents. Majority of them had been diagnosed with Angina pectoris (56.5%) and 1 year or above duration of treatment (56.5%). Similarly, common mode

of treatment was CMT (52.9%), presence of HTN (68.2%), DM (40.0%) and high cholesterol (58.8%) as common comorbidities among CAD patients.

Table 2: Disease related Characteristics of the Respondents n=85.

Variables	Frequency(Percent)
Clinical Diagnosis	
Myocardial Infarction	22(25.9)
Angina Pectoris	48(56.5)
Ischemic heart disease	15(17.6)
Duration of Treatment	
<1 year	37(43.5)
≥1 Years	48(56.5)
Mode of Treatment*	
CMT	45(52.9)
CMT+PI	24(28.3)
CMT+CABG	8(9.4)
CMT+PI+CABG	8(9.4)
Presence of Co-morbidities	
High blood pressure	58(68.2)
Diabetes Mellitus	34(40.0)
High Cholesterol	50(58.8)

*CMT=Continuous Medical Treatment, PI= Percutaneous Intervention and CABG= Coronary Artery Bypass Graft

Table 3 shows that before and after behaviour patterns of respondents. Most of the respondents had smoking habit (before-56.5% and after 44.7%), tobacco use (before 48.2% and after 40.0%), and alcohol consumption

(before 52.9% and after 45.9%), eat red meat (before 82.4% and after 69.4%), eat fatty substance (before 82.4% and after 65.9%) and sedentary life style (before 51.8% and 43.5%).

Table 3: Behaviour Patterns of the Respondents n=85.

Variables	Before diagnosis	After diagnosis
	No. (%)	No. (%)
Smoking habit	48(56.5)	38(44.7)
Tobacco use	41(48.2)	34(40.0)
Alcohol consumption	45(52.9)	39(45.9)
Eat red meat	70(82.4)	59(69.4)
Eat fatty substance	70(82.4)	56(65.9)
Sedentary life style	44(51.8)	37(43.5)

Table 4 depicts knowledge score regarding CR, highest score was found in four different responses of 19 items of CADE-Q such as full knowledge on guideline for physical activity, incomplete knowledge on definition

and meaning of CAD, wrong knowledge on level of optimal blood pressure and none knowledge on avoid carrying usual physical exercise during bad flu.

Table 4: Knowledge Score Regarding Cardiac Rehabilitation According to CADE-Q n=85.

Questions No.	Full No. (%)	Incomplete No. (%)	Wrong No. (%)	None No. (%)
1.	12(14.1)	28(32.9)	26(30.6)	19(22.4)
2.	17(20.0)	24(28.2)	26(30.6)	18(21.2)
3.	32(37.6)	25(29.4)	18(21.2)	10(11.8)
4.	18(21.2)	28(32.9)	25(29.4)	14(16.5)
5.	12(14.1)	27(31.8)	25(29.4)	21(24.7)
6.	27(31.8)	21(24.7)	21(24.7)	16(18.8)
7.	25(29.4)	14(16.5)	23(27.1)	23(27.1)
8.	28(32.9)	12(14.1)	29(34.1)	38(44.7)
9.	28(32.9)	9(10.6)	24(28.2)	24(28.2)
10.	2(2.4)	7(8.2)	18(21.2)	58(68.2)
11.	13(15.3)	26(30.6)	6(7.1)	40(47.1)
12.	21(24.7)	27(31.8)	9(10.6)	28(32.9)
13.	22(25.9)	17(20.0)	27(31.8)	19(22.4)
14.	36(42.4)	16(18.8)	13(15.3)	20(23.5)
15.	17(20.0)	21(24.7)	26(30.6)	21(24.7)
16.	27(31.8)	16(18.8)	26(30.6)	16(18.8)
17.	16(18.8)	24(28.2)	36(42.4)	9(10.6)
18.	16(18.8)	26(30.6)	25(29.4)	18(21.2)
19.	15(17.6)	16(18.8)	32(37.6)	22(25.9)

Table 5 shows the area of knowledge regarding CR among CAD patients. The highest knowledge score area was found in physiopathology, signs and symptoms (50.4%) while lowest in risk factors and lifestyle (43.86%). Similarly total knowledge area was 54.63%.

Table 5: Areas of Knowledge regarding Cardiac Rehabilitation of the Respondents n=85.

Knowledge Areas*	No. of Items	Possible highest score	Obtained score range	Mean± SD	Mean%
A1	5	15	0-10	5.04±2.29	50.4
A2	8	24	0-15	6.58±3.17	43.86
A3	8	24	0-14	6.35±2.92	45.35
A4	8	24	0-17	7.69±3.45	45.23
Total	29	87	5-47	25.68±9.19	54.63

*A1-physiopathology, signals and symptoms; A2- risk factors and lifestyle; A3 - diagnostic, treatment and medicines; and, A4- physical exercise.

Table 6 shows the level of knowledge regarding CR among respondents. Majority of respondents had poor knowledge (52.9%) and minority of them had acceptable knowledge (3.5%) on CR.

Table 6: Level of Knowledge regarding Cardiac Rehabilitation of the Respondents n=85.

Knowledge Level	Points	Percent	No. (%)
Acceptable	29-39	50-69%	3(3.5%)
Poor	17-28	30-49%	45(52.9%)
Insufficient	< 17	< 30%	37(43.6%)

Table 7 shows cross tabulation between level of knowledge and socio-demographic characteristics. Majority of the respondents were older female population residing in urban region, living with family, other than brahmin/chettri, non-Hindu, joint family, illiterate and occupation as farming and housework with non-acceptable level of knowledge on CR.

Table 7: Cross tabulation between Level of Knowledge and Socio- demographic Variables $n=85$.

Socio-demographic variables	Level of Knowledge	
	Acceptable No. (%)	Non-acceptable No. (%)
Age in years		
<mean age(56.95)	2(5.1)	37(94.9)
≥mean age(56.95)	1(2.2)	45(97.8)
Sex		
Male	2(4.4)	43 (95.6)
Female	1(2.5)	39 (97.5)
Place of Residence		
Rural	3 (5.5)	52 (94.5)
Urban	0 (0.0)	30 (100.0)
Living Status		
Living with Family	1(2.4)	41 (97.6)
Living singly	2 (4.7)	41 (95.3)
*Ethnicity		
Brahmin/Chhetri	3(6.7)	42 (93.3)
Janajati	0(0.0)	26 (100.0)
Dalit	0(0.0)	8 (100.0)
Others*	0(0.0)	6 (100.0)
Religion		
Hindu	3 (4.5)	64 (95.5)
Non-Hindu	0 (0.0)	18 (100.0)
Type of Family		
Nuclear	3 (6.1)	46 (93.9)
Joint Family	0 (0.0)	36 (100.0)
Educational status		
Literate	3 (6.5)	43 (93.5)
Illiterate	0 (0.0)	39 (100.0)
Occupation		
Farming & Housework	2 (3.2)	60 (96.8)
Service & Business	1 (4.3)	22 (95.7)

*Others- Terai caste

Table 8 & 9 also represented that level of knowledge with disease related variable and behaviour pattern of the respondents. Majority of the respondents were diagnosed with angina pectoris, less than one year treatment

duration, non-invasive treatment modalities, non-hypertension, non-diabetes and non- hyperlipidemia and healthy lifestyle with non-acceptable level of knowledge regarding CR.

Table 8: Cross tabulation between Level of Knowledge and Disease Related Variables $n=85$.

Disease related variables	Level of Knowledge	
	Acceptable No. (%)	Non-acceptable No. (%)
Clinical Diagnosis		
Myocardial Infarction	1(4.5)	21(95.5)
Angina Pectoris	1(2.1)	47(97.9)
Ischemic Heart Disease	1 (6.7)	14 (93.3)
Duration of Treatment		
<1 year	1(2.7)	36 (97.3)
≥1 years	2 (4.2)	46 (95.8)
Mode of Treatment		
Invasive	2(4.4)	43(95.6)
Non- invasive	1(2.5)	39 (97.5)
Co-morbidities		
High Blood Pressure		
Absent	1(3.7)	26 (96.3)
Present	2 (3.4)	56 (96.6)
Diabetes Mellitus		
Absent	2 (3.9)	49 (96.1)
Present	1(2.9)	33(97.1)
High Cholesterol		
Absent	2(5.7)	33 (94.3)
Present	1 (2.0)	49 (98.0)

Table 9: Cross tabulation between Level of Knowledge and Behaviour Pattern $n=85$.

Behaviour Pattern	Level of Knowledge	
	Acceptable No. (%)	Non-acceptable No. (%)
Smoking Currently		
Yes	1 (2.6)	37 (97.4)
No	2(4.3)	45 (95.7)
Tobacco use		
Yes	2 (5.9)	32 (94.1)
No	1(2.0)	50 (98.0)
Alcohol consumption		
Yes	2(5.1)	37(94.9)
No	1(2.2)	45 (97.8)
Eat red meat		
Yes	2 (3.4)	57 (96.6)
No	1(3.8)	25 (96.2)
Eat fatty substance		
Yes	2 (3.6)	54 (96.4)
No	1(3.4)	28 (96.6)
Sedentary lifestyle		
Yes	2 (5.4)	35(94.6)
No	1(2.1)	47 (97.9)

DISCUSSION

According to the research findings, it demonstrated that basically most of the participant had poor knowledge on CAD. This finding is consistent with a cross-sectional study conducted in Turkey (2015) that reported level of knowledge on CR was found medium level,^[12] and another study done in China reported by Zhou (2017) that level of awareness rate was only 47.31%.^[13] Similarly in Nepal a study finding reported that 57% of the CHD patients were unaware about CR.^[14]

In this study, cross tabulation between level of knowledge and selected variables showed non acceptable level of knowledge among older females residing in urban region, living with family, from a joint family, illiterate and those doing farming and housework. Similarly, common clinical diagnosis was angina with less than one year treatment duration, using non-invasive treatment modalities and absence of comorbidities. Additionally, they are adapting a healthy life style even though majority had non-acceptable level of knowledge regarding CR. This finding was contradictory with different studies' findings.^[9,14-15]

CONCLUSION

The findings of this study gives an idea about the kind of information required to draw more attention from health professionals involved in cardiac rehabilitation programs in Nepal, towards the subgroup of people suffering from CAD.

The level of knowledge on CR among Nepalese CAD patient was found to be sub-optimal. Hence, the role of health care professionals is extremely crucial in organizing educational intervention programs on CR, /that would ultimately result in increased level of

knowledge among CAD patients. Furthermore, with increased level of knowledge regarding CR, the public will take an early secondary preventive measure and Precautionary action to avoid the complications related to it. Therefore educational program of CR should be held frequently to help and facilitate CAD patients to upgrade their knowledge continuously.

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REFERENCES

1. World Health Organization. Fact Sheet; Geneva, 2018.
2. World Health Organization. World Health Statistics. Geneva, 2008.
3. Vaidya A, Pokharel PK, Nagesh S, Karki P, Kumar S, Majhi S. Prevalence of coronary heart disease in the urban adult males of eastern Nepal: a population-based analytical cross-sectional study. *Indian Heart J*, 2009; 61(4): 341-7.
4. Choure N, Chandrawanshi HK, Rajput MS, Sehgal S, Patliya ME, Sarkar PD. The effectiveness of self-instructional module on cardiac rehabilitation. *International Journal of Nursing Science*, 2015; 2: 317-323. doi.org/10.1016/j.ijnss.2015.07.004
5. What is Cardiac Rehabilitation? Retrieved Nov, 17, 2019, from <http://www.nhlbi.nih.gov/health/health-topics/topics/cad>, 2016.
6. Zhou Y, Li J, Du S, Du X, Fu C, Cao C, Wang Y. Cardiac rehabilitation knowledge in patients with

- Coronary heart disease in Baoding city of China: A cross-sectional study. *International Journal of Nursing Sciences*, 2017; (4): 24-28. doi.org/10.1016/j.ijnss.2016.12.011.
7. Kayaniyil S, Ardern CI, Winstanley J, Parsons C, Brister S, Oh P, Stewart DG, Grace SL. Degree and correlates of cardiac knowledge and awareness among cardiac inpatients. *Patient Educ Couns*, 2009; 75(1): 99-107. doi: 10.1016/j.pec.2008.09.005.
 8. Ghisi GLDG, D urieux A, Manfroi WC, Herdy AH, Carvalho TD, Andrade A, Benetti M. Construction and validation of the CADE-Q for patient education in cardiac rehabilitation programs. *Arq Bras Cardiol*, 2010; 94(6): 763-771.
 9. Vaidya, A., Aryal, U.R., & Krettek, A. Cardiovascular health knowledge, attitude and practice/behaviour in an urbanizing community of Nepal: a population-based cross-sectional study from Jhaukhel-Duwakot Health Demographic Surveillance Site. *BMJ Open*, 2013; 3(10): e002976. <http://doi.org/10.1136/bmjopen-2013-002976>.
 10. Shrestha R, Shrestha S, Adhikari B, Sharma B. Health-Related Quality of Life and Behavioural Risk Factors among Coronary Heart Disease Patients in a Tertiary Hospital. *Int J Health Sci Res.*, 2015; 5(11): 211-217.
 11. Ghisi GLDM, Oh P, Thomas, S., Benetti M. Assessment of patient knowledge of cardiac rehabilitation: Brazil vs Canada. *Arq Bras Cardiol*, 2013; doi: 10.5935/abc.20130145
 12. Andsoy, I.I., Tastan, S., Iyigun, E., & Kopp, L.R. Knowledge and attitude towards cardiovascular disease in a population of North Western Turkey: A cross-sectional Survey. *International Journal of Caring Sciences*, 2015; 8(1): 115.
 13. Zhou, Y., Du, S., FU, C., Cao, C., & Wang, Y. Cardiac rehabilitation knowledge in patients with coronary heart disease in Baoding city of China: A cross-sectional study. *International Journal of Nursing Sciences*, 2017; 4(1): 24-28. doi: 10.1016/j.ijnss.2016.12.011.
 14. Shrestha R. & Shrestha, S. Awareness regarding cardiac rehabilitation among patients with coronary heart disease attending a cardiac care center, Kathmandu valley. *Nepalese Heart Journal*, 2019; 16(1): 47-50.
 15. Yalcinkaya, M., Ozer, F.G., & Karamanoglu, A.Y. Evaluation of Healthy Lifestyle Behaviours in Health Care Workers. *TAF Pre Med Bull*, 2007; 6(6): 409-420.