

Original Research Article

## Health-Related Quality of Life and Behavioural Risk Factors among Coronary Heart Disease Patients in a Tertiary Hospital

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### ABSTRACT

**Introduction/Objective:** Non-communicable diseases especially coronary heart disease is increasing rapidly in developing world due to rapid changes in the economic, social and demographic determinants of health as well as adoption of unhealthy lifestyle. Behavioral risk factors is one of the important influencing factors of health related quality of life among Coronary heart disease patient. The aim of this study was to assess the association between behavioural risk factors and health related quality of life among coronary heart disease patients.

**Methods:** A descriptive cross-sectional study design was used with 254 coronary heart disease patients attending out-patient department of a national cardiac centre, Sahid Gangalal National Heart Centre, Kathmandu, Nepal from February to May, 2014. They were enrolled and interviewed with MacNew health - related quality of life questionnaire.

**Results:** The health related quality of life was lower in physical domain compared to emotional and social domains. Similarly, the mean score of global health related quality of life was higher among patient with angina pectoris ( $3.96 \pm 0.94$ ) compared to myocardial infarction ( $3.79 \pm 0.85$ ) and heart failure ( $3.58 \pm 0.61$ ) group. Coronary heart disease patients with behavioral risk factors such as history of chewing tobacco, eating red meat and fatty substances had significantly lower health related quality of life. Likewise, health related quality of life was significantly lower among those patients who perceived barriers negatively and the most common perceived barriers were dietary restriction, lack of information on disease condition and stress related to prognosis of disease condition.

**Conclusions:** The health related quality of life was found to be lower in physical domain and the influencing factors of health related quality of life were behavioral risk factors and perceived barriers. Hence, the interventions in any of these areas may prove beneficial.

**Key words:** Behavioural risk factors, Coronary heart disease, health related quality of life.

### INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of mortality, representing over 60% of all death worldwide. <sup>(1)</sup> Cardiovascular Disease (CVD) is the most common NCDs which accounts 17.5 million deaths annually. <sup>(2)</sup> Among CVDs, Coronary Heart Disease (CHD) is the leading cause of morbidity and

mortality which represents nearly half of all deaths from cardiovascular disease in 2013 <sup>(3)</sup> and is becoming an emerging health problem in Low and Middle Income Countries (LMICs) like Nepal. <sup>(4)</sup>

The major risk factors of NCDs were tobacco use, physical inactivity, the harmful use of alcohol and unhealthy

diets.<sup>(5)</sup> The people in LMICs are more exposed to behavioral risk factors, and have less access to effective and equitable health services compared to people in high-income countries. Hence, the prevalence and incidence of CHD is increasing in LMIC.<sup>(6,7)</sup>

Nepalese society is now in transitional phase both culturally and epidemiologically adapting western lifestyle such as habit of taking fast foods, late night gathering with consumption of alcohol and tobacco, sedentary lifestyles and competitive environment etc. These lifestyles are very different from their ancestors. This lifestyle is adopted faster by urban population than rural one.<sup>(8,9)</sup> These unhealthy behaviors contribute to biological risk factors such as overweight & obesity, raised blood pressure, raised blood glucose and abnormal lipids which in turn are potential risk factors that attribute to CHD<sup>(10)</sup>

Health-related Quality of Life (HRQL) is an increasingly important outcome measure in the management and care of patients with CHD. It is the subjective perception of patient's health, which includes not only physical but also psychological and social functioning.<sup>(11)</sup> Notably presence of cardiovascular risk factors is related to a decreased quality of life among CHD patients.<sup>(12)</sup> Therefore, control of behavioural and biological risk factors would play a key role in improving HRQL among CHD patients. Notably the reduction in behavior risk factors like tobacco use, unhealthy diet, physical inactivity and excessive use of alcohol can prevent large percentage of CHD. Understanding these behavioral risk factors among CHD patients would aid in designing effective intervention against coronary heart disease progression. Therefore, this study intends to identify the health related quality of life and behavioral risk factors among CHD patient.

## MATERIALS AND METHODS

A cross-sectional study design was used to assess the health related quality of life and behavioral risk factors among coronary heart disease patients in a Sahid Gangalal National Heart Center (SGNHC), Kathmandu, Nepal. The study population consisted of patients suffering from CHD (Myocardial infarction, Angina pectoris, and Heart failure), who were clinically diagnosed to have CHD for at least 3 months and attending at Out Patients Department (OPD) for follow-up visits at SGNHC. A total 254 CHD patients who visited the OPD in the first come first basis in a day from February to May 2014 were enrolled as study participants.

Data was collected through face to face interview by researcher herself using pre-tested standardized questionnaire developed by MacNew team for assessing the health-related quality of life (HRQL).<sup>(13)</sup> MacNew HRQL scale included 'emotional', 'physical' and 'social' domains with seven possible responses, where "1" represents the lowest HRQL and "7" the highest.<sup>(14)</sup> This scale was used by different researcher in different countries and reported the internal consistency ranging from 0.70-0.92.<sup>(15)</sup> After adopting the MacNew HRQL questionnaire; it was checked for adequacy and appropriateness of items by two cardiologists. After that the instrument was translated into Nepali language then back translation to English version by English- Nepali language experts and health personnel sequentially for validity. The reliability of the instrument was determined using the internal consistency method. The Cronbach's alpha value was 0.78 which indicated the instrument to be reliable in the global range.

For measuring behavioral risk factor investigators have developed dichotomous questions which measure behavioral patterns among CHD patients containing six items like smoking habit, tobacco chewing habit, eating red meat, alcohol consumption, eating fatty substance and sedentary life style.

Prior to data collection, research proposal was approved by the research committee of Maharajganj Nursing Campus, Institute of Medicine (IOM), Tribhuvan University and ethical clearance was taken from Institutional Review Board (IRB), IOM, Maharajganj, Kathmandu, Nepal. Data collection approval was obtained from SGNHC and individual informed consent was obtained and assured of the confidentiality of the information to the respondents.

Data was analyzed using SPSS version 17.0 for window. Categorical variables were described as frequency and percentage while continuous variables were presented as mean, standard deviation. Global HRQL was computed by scoring all three subscales/domains of HRQL. Independent sample t test and one way ANOVA were used to find out significance

differences between mean score of HRQL with behavioural risk factors and perceived barriers to HRQL of the CHD patients.

## RESULTS

### *Socio-demographic and Clinical Characteristics Profile of Coronary Heart Disease Patients (Table 1)*

A sample of 254 CHD patients drawn purposively showed mean age of  $64.0 \pm 8.19$  among patients with Heart failure. Majority of the respondents were male (72.4 %), residing in rural (53.1 %), living with family (92.5%), Brahmin/Chhetri (51.6%), Hindu (85.0%), literate (63.4 %), farmer (27.6 %), receiving treatment for equal or more than 1 year (56.7 %), receiving continuous medical treatment (47.0%) and suffering from hypertension (72.0%).

**Table 1- Sociodemographic and Clinical Profile of Coronary Heart Disease Patients**

Patient Characteristics	Total CHD (n=254)	Myocardial Infarction (n=171)	Angina Pectoris (n=73)	Heart Failure (n=10)
<b>Age group (in years)</b>	58 ± 10.4	58 ± 10.5	58 ± 10.3	64 ± 8.1
<b>Sex</b>				
Male	72.4%	74.0%	74.0%	40.0%
Female	27.6%	26.0%	26.0%	60.0%
<b>Place of Residence</b>	53.1%			
Rural	46.9%	56.0%	47.0%	50.0%
Urban		44.0%	53.0%	50.0%
<b>Living Status</b>	92.5%			
Living with family	7.5%	92.0%	93.0%	100.0%
Living Single*		8.0 %	7.0%	-
<b>Ethnicity</b>				
Brahman/Chhetri	51.6%	50.0%	52.0%	70.0%
Indigenous/Janajati	33.5%	34.0%	34.0%	30.0%
Dalit	15.0%	16.0%	14.0%	-
<b>Religion</b>				
Hindu	85.0%	84.0%	86.0%	100.0%
Non Hindu	15.0%	16.0%	14.0%	-
<b>Educational Status</b>				
Literate	63.4%	65.0%	60.0%	60.0%
Illiterate	36.6%	35.0%	40.0%	40.0%
<b>Occupation</b>		24.0%		
Agriculture	27.6%	25.0%	36.0%	20.0%
House work **	26.4%	24.0%	25.0%	60.0%
Service	25.2%	27.0%	29.0%	20.0%
Business	20.8%		10.0%	-
<b>Duration of Treatment</b>				
< 1 Year	43.7%	47.0%	37.0%	30.0%
≥ 1 Year	56.7%	53.0%	63.0%	70.0%
<b>Mode of Treatment***</b>				
CMT	47%	41.0%	53.0%	80.0%
CMT + PI	41.3%	11.0%	4.0%	-
CMT + PI + CABG	8.7%	41.0%	40.0%	20.0%
CMT + CABG	3.5%	17.0%	3.0%	-
<b>Hypertensive</b>	72.0%	71.0%	74.0%	70.0%
<b>Diabetic</b>	57.0%	56.0%	60.0%	40.0%
<b>Hypercholesterolemia</b>	71.0%	74.0%	71.0%	30.0%

\*Unmarried, divorce, widower/widow

\*\*Household activities like cooking, washing, cleaning, etc but do not earn money

\*\*\*CMT= Continuous Medical Treatment, PI= Percutaneous Intervention, CABG =Coronary Artery Bypass Graf.;

**Table 2 - Descriptive Statistics of MacNew HRQL Scores of Coronary Heart Disease Patients**

MacNew Scale	Total CHD (n=254)	MacNew HRQL Score Mean $\pm$ SD		
		Myocardial Infarction (n=171)	Angina Pectoris (n=73)	Heart Failure (n=10)
Global Score	3.83 $\pm$ 0.87	3.79 $\pm$ 0.85	3.96 $\pm$ 0.94	3.58 $\pm$ 0.61
Emotional	3.87 $\pm$ 1.01	3.85 $\pm$ 0.99	3.97 $\pm$ 1.07	3.55 $\pm$ 0.77
Physical	3.81 $\pm$ 0.88	3.78 $\pm$ 0.87	3.94 $\pm$ 0.92	3.50 $\pm$ 0.55
Social	3.82 $\pm$ 0.88	3.76 $\pm$ 0.84	3.97 $\pm$ 0.97	3.68 $\pm$ 0.66

**Table 3: Difference between HRQL Score and Behaviour Risk Factors of the CHD Patients (n=254)**

Behaviour Risk Factors	HRQL Scores of MacNew Domain Mean $\pm$ SD			
	Emotional	Physical	Social	Global Score
Smoking Currently				
Yes (30)	3.67 $\pm$ 0.94	3.70 $\pm$ 0.90	3.74 $\pm$ 0.88	3.70 $\pm$ 0.87
No (224)	3.90 $\pm$ 1.01	3.83 $\pm$ 0.87	3.83 $\pm$ 0.88	3.85 $\pm$ 0.87
*p value	0.222	0.452	0.629	0.385
Tobacco Chewing				
Yes (39)	3.36 $\pm$ 1.03	3.41 $\pm$ 0.88	3.37 $\pm$ 0.84	3.38 $\pm$ 0.86
No (215)	3.96 $\pm$ 0.97	3.89 $\pm$ 0.86	3.90 $\pm$ 0.86	3.92 $\pm$ 0.85
*p value	<0.001	0.003	<0.001	<0.001
Eating Red Meat				
Yes (122)	3.65 $\pm$ 0.97	3.65 $\pm$ 0.83	3.70 $\pm$ 0.89	3.66 $\pm$ 0.85
No (132)	4.07 $\pm$ 1.00	3.97 $\pm$ 0.89	3.93 $\pm$ 0.85	3.99 $\pm$ 0.86
*p value	<0.001	0.003	0.038	0.003
Alcohol Consumption				
Yes (43)	3.94 $\pm$ 0.98	3.83 $\pm$ 0.94	3.87 $\pm$ 0.94	3.88 $\pm$ 0.92
No (211)	3.85 $\pm$ 1.01	3.81 $\pm$ 0.87	3.81 $\pm$ 0.86	3.82 $\pm$ 0.86
*p value	0.605	0.926	0.677	0.721
Eating Butter/Cheese				
Yes (86)	3.48 $\pm$ 0.88	3.57 $\pm$ 0.78	3.59 $\pm$ 0.83	3.55 $\pm$ 0.79
No (168)	4.07 $\pm$ 1.01	3.94 $\pm$ 0.90	3.94 $\pm$ 0.88	3.98 $\pm$ 0.88
*p value	<0.001	<0.001	0.002	<0.001
Sedentary Life Style				
Yes (146)	4.01 $\pm$ 1.02	3.93 $\pm$ 0.89	3.88 $\pm$ 0.86	3.94 $\pm$ 0.87
No (108)	3.68 $\pm$ 0.95	3.66 $\pm$ 0.83	3.73 $\pm$ 0.90	3.69 $\pm$ 0.86
*p value	0.009	0.016	0.163	0.024

P significant at  $\leq 0.05$  level; \* Independent sample t test

**Table 4 : Difference between HRQL Score and Perceived Barriers of CHD Patients (n=254)**

Limiting Factors	Response	Total CHD	Mean $\pm$ SD	*P value
Dietary restriction	Yes	90.9%	3.77 $\pm$ 0.81	0.008
	No	9.1%	4.48 $\pm$ 1.15	
Lack of information on disease condition	Yes	88.2%	3.77 $\pm$ 0.84	<0.001
	No	11.8%	4.34 $\pm$ 0.94	
Stress related to prognosis of disease	Yes	85.4%	3.67 $\pm$ 0.77	<0.001
	No	14.6%	4.77 $\pm$ 0.88	
Lack of information about life style modification	Yes	83.5%	3.74 $\pm$ 0.78	<0.001
	No	16.5%	4.32 $\pm$ 1.13	
Experience of chest pain	Yes	78.7%	3.71 $\pm$ 0.81	<0.001
	No	21.3%	4.27 $\pm$ 0.94	
Inability to lift heavy object	Yes	75.2%	3.80 $\pm$ 0.84	0.28
	No	24.8%	3.94 $\pm$ 0.96	
Breathlessness in normal activity	Yes	68.5%	3.70 $\pm$ 0.84	<0.001
	No	31.5%	4.11 $\pm$ 0.88	
Difficulty in daily works	Yes	58.7%	3.72 $\pm$ 0.77	0.018
	No	41.3%	3.99 $\pm$ 0.98	
Excessive sweating	Yes	54.7%	3.75 $\pm$ 0.74	0.109
	No	45.3%	3.93 $\pm$ 1.00	
Fear of performing physical exercise	Yes	53.9%	3.76 $\pm$ 0.79	0.134
	No	46.1%	3.92 $\pm$ 0.95	
Feeling of stress to quit smoking	Yes	53.9%	3.70 $\pm$ 0.81	0.01
	No	46.1%	3.99 $\pm$ 0.92	
Inability to control alcohol	Yes	39.8%	3.64 $\pm$ 0.79	0.004
	No	60.2%	3.96 $\pm$ 0.90	

P significant at  $\leq 0.05$  level; \* Independent sample t test

*Descriptive Statistics of MacNew HRQL Score of Coronary Heart Disease Patients (Table 2).*

MacNew HRQL score was calculated according to global and subscale among Myocardial infarction,

Angina pectoris and Heart failure patients. Global HRQL score was  $3.83 \pm 0.87$  where HRQL score was higher in emotional domain and lower in physical domain. According to type of CHD, the higher global mean score was found in patients with Angina pectoris ( $3.96 \pm 0.94$ ) than patients with MI and Heart failure ( $3.79 \pm 0.85$  and  $3.58 \pm 0.61$ ) respectively.

***Difference between HRQL Score and Behaviour Risk Factors of the CHD patients (Table 3).***

The HRQL scores were significantly higher among those respondents who had no habit of tobacco chewing, vegetarian, those consuming less butter/ghee/cheese and those adopting sedentary lifestyles.

***Difference between HRQL Score and Perceived Barriers of CHD Patients (Table 4).***

The global HRQL scores were found to be significantly higher among those respondents, who did not perceive barriers to maintain their HRQL compared to respondents with perceived barriers. Among barriers, top five were dietary restriction (90.0%), lack of information on disease condition (88.2%), stress related to prognosis of disease condition (85.4%), lack of information about life style modification (83.5%) and experience of chest pain/heaviness during routine works (78.7%).

## **DISCUSSION**

The present study aimed to evaluate association between behavioural risk factors and quality of life among CHD patients. The major findings were reported: (i) CHD patients had higher HRQL in emotional domain (ii) HRQL score was significantly lower among the CHD patients with behavioral risk factors and perceived barriers to maintain quality of life.

Health-related quality of life of CHD patients was higher in emotional domain and lower in physical domain.

This might be due to majority of respondents were male and they have tendency to hide their tears with others. This finding is consistent with the study done in Austria with 465 CHD patients by using MacNew HRQL tool which reported that lower mean score found in physical domain of global HRQL score.<sup>(16)</sup> Likewise, study conducted in Australia also found that the CHD patients had lower HRQL score in all three domains of HRQL.

Regarding type of CHD, the higher global mean score was found in patients with Angina pectoris than patients with MI and Heart failure. In contrast to this finding, a study done in Canada reported that patients with Angina pectoris has poor quality of life<sup>(17)</sup> and another study done in Hong Kong with 381 Chinese CHD patient also reported that heart failure patient had significantly lower HRQL compared with the other two cardiac diagnostic group.<sup>(18)</sup>

With regard to behavioral risk factors, HRQL score was significantly lower with respondents adopting risk behavioral factors like habit of tobacco chewing, non-vegetarian, habit of eating butter ghee regularly and not continuing sedentary life style group. This finding was supported by a study done in Brazil, which reported that the presence of cardiovascular risk factors is associated with decreased quality of life among CHD patients.<sup>(12)</sup> In contrast to our finding, a study done in USA suggested that cardiac patients participating in physical activities program had higher QoL,<sup>(19)</sup> regular physical activity had protective effects on quality of life done in Brazil.<sup>(12)</sup> which might be due to whenever people diagnose by heart disease perceive as a serious health problem by patient as well as family member and relatives in our context and they assume or enforce to play or treat as patient at home and seems to physically inactive for prevent further complications. However smoking and alcohol

consumption were not associated with HRQL in our study. But a contradictory finding was reported that persistent smokers had less improvement in HRQL than nonsmokers among CHD patients who under gone percutaneous coronary revascularization in Boston. <sup>(20)</sup>

On perceived barriers to HRQL, our study found significantly lower HRQL scores among CHD patients who perceived barriers to maintain quality of life. In systematic review carried out by Critchley and Capewell stated that the patients who perceived higher barrier had lower HRQL score <sup>(21)</sup> and a longitudinal study conducted in USA with 440 CHD patients reported that quality of life was found significantly worse among CHD patients. <sup>(22)</sup> To overcome these barriers, nurses can play vital role to reduce distress among MI patient by using of different nursing approaches like reassurance/encouragement, listening and the provision of advice. <sup>(23)</sup>

## CONCLUSIONS

Quality of life of CHD patients was higher in emotional domain and lower in physical domain. Behavioral risk factors and perceived barriers were the influencing factors of health related quality of life of CHD patients. Hence, physical health as well as behavior factors and perceived barriers to HRQL are need to be addressed in self-instructional module on living well with CHD for the enhancement of quality of life of CHD patients.

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**Authors' Contribution:** RS conceived this research work. SS is RS's supervisor and contributed to all aspects of this study from

making proposal to finalization of the manuscript, BA contributed in the statistical analysis portion and preparing the manuscript and BS contributed in preparing manuscript.

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