

# Knowledge Regarding Modifiable Risk Factors of Coronary Atherosclerosis Heart Diseases in Kathmandu Municipality

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## Abstract

### Background

Progressive urbanization and adoption of the “western” lifestyle contributes to the rising burden of cardiovascular disease in the developing world. Coronary Atherosclerotic Heart Disease is no longer confined by geographical area or socioeconomic boundary. The prevalence of Coronary Atherosclerotic Heart Disease is increasing in Nepal. Knowledge is an important pre-requisite for implementing both primary and secondary preventive strategies for cardiovascular diseases. This investigation attempts to quantify knowledge of modifiable risk factors of Coronary Atherosclerotic Heart Disease among sample population in Kathmandu metropolitan city.

### Methods

Community based cross-sectional descriptive study design using quantitative method of study was conducted in ward no 5 of Kathmandu out of 35 wards. Selection was done by simple random technique (lottery method). Total house hold serial number of selected ward was identified from election commission record section and data was collected using systemic random sampling. The household head aged 18 years and above was taken as representative sample ( $n=196$ ). Standard questionnaire was used to interview participants. The risk factors specifically included smoking, hypertension, elevated cholesterol levels, diabetes mellitus and obesity.

### Results

The mean age (SD) of the 196 participants was 51.26 (13.56) years. Of the participants only 22% had good level of knowledge regarding modifiable risk factors of Coronary Atherosclerotic Heart Disease. This study showed that majority of the respondent lack predefined good level of knowledge regarding modifiable risk factors of Coronary Atherosclerotic Heart Disease. 85.2%, 61.73%, 40.31%, 28.6%, 17.86% correctly identified hypertension, obesity, cholesterol, smoking and diabetes mellitus respectively as modifiable risk factor of Coronary Atherosclerotic Heart Disease. Study found association of good level of knowledge in male participants ( $p=0.006$ ), Brahmin cast ( $p=0.001$ ), living in nuclear family ( $p=0.041$ ), ex-smoker ( $p=0.06$ ), doing regular exercise ( $p=0.006$ ).

### Conclusion

This study call for efforts such as targeted public health education to increase the level of knowledge about the modifiable risk factors of heart disease.

**Key words** Knowledge, coronary atherosclerosis heart diseases, cross-sectional study, Nepal

## Introduction

CASHD is the leading cause of death in the world. It accounts for nearly 30% of death globally; even in low income and lower middle income countries CASHD results in 27% of total death. Further tuberculosis, malaria and AIDS result in only 10% of death globally.<sup>1</sup>

The WHO has drawn attention to the fact that CASHD modern epidemic of developing countries. Myocardial infarction is a leading cause of death in industrial nations. Even in a developing country like Nepal, it is emerging as a major public health problem. Although CASHD declined in developed countries from 1980 to 2000, the World Health Organization predicts that CASHD will become the *major* cause of death in almost all countries by 2020, with over 10 million deaths per year predicted. Progressive urbanization and adoption of a "western" lifestyle contributed to the rising burden of cardiovascular disease in the developing countries.<sup>2,3</sup>

Developing countries are repeating the earlier lifestyle mistakes of developed countries. Economists predict that rising CASHD costs will greatly sap these countries' resources, delay economic growth, and cause unnecessary suffering.<sup>4</sup> South Asia comprises 25% of the global population yet contributes nearly 60% of the global cardiovascular disease burden. Smoking, hypertension, and diabetes are strongly associated with CASHD among south Asian.<sup>5,6</sup>

Prevention of CASHD is the most effective way of combating the CASHD epidemic in the resource poor nations. Knowledge of the predisposing risk factors is important. One method of targeting preventive educational strategies involves measuring and appropriately disseminating knowledge of the modifiable risk factors. Earlier studies have revealed that education programs for the elderly were effective in improving health promotion knowledge and behaviors.<sup>7,8</sup> Although knowledge alone is insufficient, it is assumed to be a key component of behavioral change decision making,<sup>9</sup> and provides cues for action.<sup>10</sup> Estimating the level of knowledge of the population at large as well as those suffering from CVD can help to guide public health programs especially those directed towards reducing modifiable risk factors for CASHD.

The level of knowledge of risk factors for CASHD varies among different populations. In investigations in the western world, such as in Canada<sup>11</sup> shows that individuals at greater risk of cardiovascular disease are elderly and those with low education levels and are least able to recall risk factors associated with CASHD.

Similarly, in the UK, South Asian families were less likely to take regular exercise, and had a lower awareness of

cholesterol or dietary content (fiber, sugar, salt) compared to the native white population.<sup>12,13</sup> A similar study in Saudi Arabia shows that physically inactive people were least aware of their risk of CASHD.<sup>14</sup> A lack of cardiovascular health knowledge in the general population in Pakistan that reports limited knowledge of modifiable risk factors of heart disease in patients who had experienced an acute myocardial infarction.<sup>15,16</sup> This Pakistani study isolated specific demographic factors that correlate with lower knowledge of CASHD risk factors, such as fewer than ten years of formal education, current usage of tobacco, and a nuclear family. A study done in neighboring India has also identified the poor knowledge among a sampled Indian population regarding modifiable risk factors of CASHD, especially DM and study notably reveals certain characteristics that are significant predictors of poor knowledge levels of modifiable risk factors. Participants who reported low levels of routine exercise and who are current smokers had a significant poor knowledge level.<sup>17</sup>

This study evaluated the knowledge levels of the modifiable risk factors among sample of Katmandu metropolitan city. The risk factors included smoking, hypertension, elevated cholesterol levels, DM, and obesity. This study also identified gaps in the knowledge of specific risk factors as well as key demographic segments with significantly poor levels of knowledge pertaining to modifiable risk factors of CASHD.

## Methods

Community based Cross-Sectional descriptive study design using quantitative method, study was conducted in Kathmandu municipality which consists of 35 wards out of which one ward which was selected by simple random technique lottery method i.e. ward no 5. Confidence interval 95%, allowable error 10% and people having knowledge about modifiable risk factor of coronary artery diseases is estimated to be 50%.

Sample size is calculated by applying following formula:

$$n = \frac{4pq}{L^2}$$

Where, n = number of sample size

$$P = 50\%$$

$$q = 1 - P = 50\%$$

$$L = \text{allowable error (10\%)}$$

$$\text{Sample Size (n)} = 177$$

The minimum sample size for the study comes to be 196

Estimated non-response rate 10%

The final sample size is 196

Sampling was done in two phase:

1<sup>st</sup> phase: From 35 wards of Kathmandu 1 ward was selected randomly by lottery method.

2<sup>nd</sup> phase: Total house hold serial number of selected ward was identified from election commission record section and data was collected using systemic random sampling i.e. every interval of 34<sup>th</sup> house was taken and the household head aged 18 years and above were taken for the study .Structured questionnaire for face to face interview was developed. Participants were interviewed by providing with structured questionnaire under supervision to prevent from multiple respondents. Before taking the interview participants were instructed to say “yes” for risk factor that they felt definitely contribute to CASHD otherwise say “not sure”.

Out of ten risk factor included in survey , five are clearly known to cause CASHD and additional non-associated risk factors were included in the questionnaire to maintain validity of responses and avoid false positives that could be generated by random responses. After finishing the interview session the correct answers were explained to the participants. This survey questionnaire is taken from similar study done in India.

Correctly identifying four or more risk factor was regarded as good level of knowledge, while identifying three or less risk factors was regarded as poor level of knowledge and this scaling of knowledge is done based on the similar study done in India to assess knowledge of modifiable risk factor of CASHD.<sup>19</sup>

## Results

The mean age (SD) was 51.26(13.56) years of the total participants 196. Of the total 67.35% were male. Of the participants 78.5% literate , 0.51% had family history of heart attack, 1.02% were known case of diabetes mellitus, 2.04% were know case of HTN,0.51% were known case of myocardial infarction. The results indicate that the majority (77.55%) of individuals sampled lacked adequate awareness of modifiable risk factors of CASHD. The present study also demonstrates that 27.55% of participants were able to recognize at least two risk factors for heart disease, but only 8.16% of the participants were fully aware of all five key modifiable risk factors of heart disease. This study shows that majority of the respondent lack predefined good level of knowledge regarding modifiable risk factors of CASHD 85.2%, 61.73%, 40.31%, 28.6%, 17.86% correctly identified hypertension, obesity, cholesterol, smoking and diabetes mellitus as modifiable risk factor of CASHD.

Table 2 shows the association between knowledge level and selected variables. Table shows that male

respondent do have statistically significant higher level of knowledge than female ( $p=0.006$ ).Brahmin had higher level of knowledge than any other ethnic group ( $p= 0.001$ ). Though statistically insignificant literate group had better knowledge about modifiable risk factors than illiterate group. Those participants living in nuclear family had good level of knowledge which is statistically significant (0.041). Those who had quit smoking had good level of knowledge regarding modifiable risk factors of CASHD( 0.06). Those who are regular in exercise had statistically significant good level of knowledge ( 0.006)

**Table1: Demographic characteristics of participants (n= 196)**

Characteristics	n	%
<b>Age</b>		
below 35 years	24	12.24
above 35 years	172	87.76
<b>Sex</b>		
male	132	67.35
Female	64	32.65
<b>Religion</b>		
Hindu	168	85.71
Buddhist	24	12.24
Christian	3	1.53
Muslim	1	0.51
<b>Ethnic group</b>		
Brahmin	35	17.86
Chetri	60	30.61
Newar	83	42.35
Others	18	9.18
<b>Marital status</b>		
Married	190	96.94
Unmarried	4	2.04
Divorced	2	1.02
<b>Education</b>		
Illiterate	42	21.42
Literate	154	78.58
<b>Family</b>		
Nuclear	85	43.37
Extended	111	56.63
<b>Occupation</b>		
Service	64	32.65
Business	62	31.63
Unemployed	32	16.33
Retired	38	19.39
<b>Smoking habit</b>		
Never used	69	35.2
Current user	106	54.08

ex-user	21	10.71
<b>Exercise</b>		
Non or infrequent	162	82.65
Regular*	34	17.35
<b>Family history of heart attack</b>		
Yes	1	0.51
No	195	99.49
<b>Known case of DM</b>		
Yes	2	1.02
No	194	98.98
<b>Known case of HTN</b>		
Yes	4	2.04
No	192	97.96
<b>Known case of MI</b>		
Yes	1	0.51
No	195	99.49

\* at least 3 times a week and greater than 30 minutes during each session.

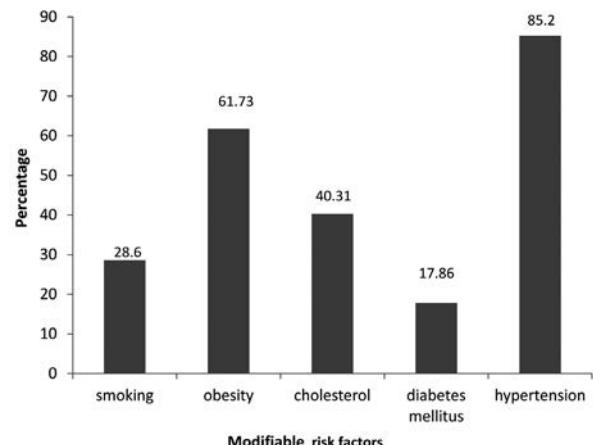


Fig 1: Knowledge of particular risk factors of CASHD (n =196)

Table 2: Association between "good" level of knowledge of modifiable risk factors with specific demographic variables (n =196)

Variables	Knowledge level n (%)		Odds ratio	95% confidence interval		P value
	Good knowledge*	Poor knowledge**		Lower	Upper	
<b>Sex</b>						
Male	37	95	3.171	1.326	7.585	0.006
Female	7	57	1			
<b>Age</b>						
below 35years	6	18	1.175	0.436	3.169	0.749
above 35 years	38	134	1			
<b>Ethnic group</b>						
Brahmin	16	19	4	1.834	8.726	0.001
others	28	133	1			
<b>Education</b>						
illiterate	2	40	0.113	0.031	0.576	0.002
literate	42	112	1			
<b>Family</b>						
Nuclear	25	60	2.018	1.023	3.98	0.041
Extended	19	92	1			
<b>Smoking habit</b>						
current user	22	84	1.31	0.57	3.06	0.49
Excuser	10	11	4.55	1.4	14.99	0.06
Never smoked	12	60	1			
<b>Exercise</b>						
Regular	14	20	3.08	1.398	6.784	0.006
non or infrequent	30	132	1			

\* Correctly identifying four or more risk factors.

\*\* identifying three or less risk factors

## Discussion

The study indicates that the majority (77.55%) of individuals sampled lacked adequate awareness of modifiable risk factors of CASHD. The present study also demonstrates that 27.55% of participants were able to recognize at least two risk factors for heart disease, but only 8.16% of the participants were fully aware of all five key modifiable risk factors of heart disease. The level of knowledge of participants is considerably lower which is consistent with study done in Pakistan and India.<sup>16,17</sup>

One particular area of interest is knowledge of cigarette smoking as a modifiable risk factor for CASHD. Importantly, only 28.6% of participants correctly identified smoking cigarettes as a modifiable risk factor of CASHD. It is an important and reversible risk factor for CASHD. Incidence of myocardial infarction is increased six fold in women and three fold in men who smoke at least 20 cigarettes per day compared to subjects who never smoked.<sup>18</sup> This result is consistent with study conducted in four tertiary hospital of Pakistan where only 31.9% could identify smoking as risk factor.<sup>16</sup> This similar lack of knowledge is found in other south Asians.<sup>19</sup> This finding is especially worrisome that significant number of people fails to identify smoking as risk factor of heart diseases as Nepal has amongst the highest percentage of smokers. In Nepal 49% men and 29% women smoke the highest in the world.<sup>20</sup> It is possible that the very poor awareness about smoking is related to their under representation in mass media campaigns as opposed to smoking and suggests the need for urgent emphasis on education amongst Nepalese. Nepal lacks the infrastructure of educational facilities and programs vital to raising awareness and knowledge of smoking and its contribution to atherosclerotic cardiovascular disease and needs educating the people through mass media and introducing the strong law against smoking at public places.

A significant percentage (82.14%) of participants failed to identify DM as a risk factor. This result is consistent with studies conducted among urban adult Indians that found a low level of awareness of DM.<sup>17,21</sup>

Study shows that there is association between level of knowledge between male and female, male participants have good level of knowledge which is statistically significant ( $p= 0.006$ ). The possible description of it would be our society is male dominant and literacy rate is higher in male and they do have more health seeking behavior than female.

Brahmin subject showed statistically significant good level of knowledge ( $p= 0.001$ ). Earlier studies have shown a clear distinction in various health belief and health seeking behavior among different ethnic group.<sup>22</sup> This signifies that while conducting health awareness programs other ethnic group need be in more focused.

Those living in nuclear family have significant association of good knowledge ( $p= 0.041$ ). A significant majority of the participants 56.63% were noted to be living in an extended family system. Interestingly, subjects who lived in extend family system had less knowledge about modifiable risk factors. One would have thought that those living in an extended family would have been more likely to be exposed to close relatives with heart disease and thus to the advices that was offered but the data do not support this. There are several possible explanation of this observation. The frequent and close contact of an extended family system may lead to exposure and reinforcement of traditional and potentially unhealthy health practice and beliefs.<sup>23</sup>

In this study smokers were less knowledgeable about risk factors. Ex-smokers had statistically significant good level of knowledge (0.06). This finding is consistent with other studies conducted in the Saudi Arabia, Pakistan and India.<sup>14,16,17</sup>

Very few people are involved in regular exercise habit. Those who are regular in exercise had statistically significant good level of knowledge (0.006), this finding is consistent with previous studies.<sup>11,18,19</sup>

## Conclusion

Study finding highlight a striking lack of knowledge of modifiable risk factors among individuals. The result of study have also helped to identify the segment of population who need to be targeted; those includes tobacco users, illiterate grope, those living in extended family system, other ethnic group that Brahmin. The finding of this study suggests that aggressive and targeted education about the relationship of modifiable risk factors specially smoking and DM and about role of exercise with CASHD.

This study call for efforts such as targeted public health education to increase the level of knowledge about the modifiable risk factors of heart disease. The program must be sensitive to the attitude, perception and capabilities of targeted individuals. Physician must also ensure that they impart education to their clients as the patients usually rely on doctors for first hand information. Further epidemiological longitudinal studies and population based are needed in Nepal to assess the knowledge regarding modifiable behavioral risk factors for heart diseases.

Study despite some limitations, should raise strong concern about the lack of knowledge and awareness about the CASHD and should serve as a stimulus for establishing health education programs. Prevention of CASHD is most effective way of combating its epidemic in the resource poor nation like Nepal as it is said that one ounce of prevention is better than one pound of cure.

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