SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 5.
Issue: 5.
Page N. 84-90
Year: 2021

Original Article www.wjahr.com

AWARENESS OF CARDIOVASCULAR DISEASES RISK FACTORS AMONG PEOPLE RESIDING IN AN URBAN COMMUNITY

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Received date: 08 August 2021 **Revised date:** 14 August 2021 **Accepted date:** 20 August 2021

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ABSTRACT

Background: Cardiovascular diseases (CVDs) are the major cause of deaths globally, with the estimated 31% of all deaths worldwide. In Nepal the CVDs mortality rate has been increased from 124.1 per 100,000 population in 1990 to 164.7 per 100,000 population in 2017. This study was aimed to identify the awareness of cardiovascular diseases risk factors among people of Lalitpur Metropolitan City, Nepal. **Methods:** Cross-sectional analytical study was conducted among people (18 to 60 years) (n=380) residing in Lalitpur Metropolitan City, Nepal From May to July, 2021. A structured questionnaire based on the Cardiovascular Risk Factor-Knowledge Level (CARRF-KL) scale was used to collect the data for awareness. Descriptive and inferential (Chi-Square) statistics was used for data analysis. P value was set at 0.05. **Results:** The mean age of respondents was 40.7 years where about 30% belonged to the age group of 38-47 years. Half of the respondents were females. Of them, 13.9% were suffering from CVDs. Regarding the level of awareness, 38.7% had good awareness, 51.1% had average awareness and 10.3% had poor awareness on cardiovascular diseases risk factors. More than half of respondents (52.8%), who had cardiovascular diseases, had good awareness. There was significant association between gender, educational status, employment status and level of awareness on CVDs risk factors. **Conclusion:** The awareness level of urban community people of Lalitpur Metropolitan city regarding CVD was average. On the basis of findings of this study, awareness program regarding the risk factors of CVDs is needed to promote the healthy lifestyle for the prevention of the diseases of the community people.

KEYWORDS: Awareness, Cardiovascular disease, People, Risk factors, Urban community.

INTRODUCTION

Cardiovascular diseases (CVDs) are the major cause of deaths globally, with the estimated 31% of all deaths worldwide. [1] Of these deaths, 85% are due to heart attack and stroke.[1]

The CVD related mortality rate in India is 282.3 per 100,000 population.[2] In Nepal the CVDs mortality rate has been increased from 124.1 per 100,000 population in 1990 to 164.7 per 100,000 population in 2017.[2]

Many risk factors of CVDs were found among Nepalese population (18-70 years) (n=347) of Kathmandu, which included smoking (17.6%), alcohol consumption (29.4%), insufficient fruit and vegetables intake (98%), insufficient physical activity (21.0%), obesity (15.3%), hypertension(34.4%), diabetes (10.5%), and high triglyceride levels (10.8%). [3] Similarly, the prevalence of CVD risk factor such as obesity in anganwadi workers (n=188) was 34 (43.1%) and hypertension was 52 (27.66%) in India. But only 26.1% participants' knowledge score of CVDs was high (score ≥36) and 66.5% had good knowledge score (score ≥24).[4]

Reduction of premature mortality from CVDs is possible with the healthy lifestyle. For that knowledge of risk factors of CVDs is crucial for every young and adult people. It is assumed that the awareness towards risk factors of CVDs is associated to the adaptation of healthy behavior which prevents the development of CVDs. A study conducted in Pakistan (n=110) showed only 70 (63.6%) knew smoking as risk factor of CVDS, 40 (36.4)

said high density lipoprotein (HDL) is good type of cholesterol and 38 (34.5%) knew eating fruits and vegetables is able to prevent CVDs.[5] Knowledge level of Chinese people [637(56.9%)] on CVDs was also low (0-7 score out of 26).[6]

A study done among visitors of attending a cardiac center located in the capital city of Nepal (Shahid Gangalal National Heart Centre) revealed that only 17.8% knew smoking and 6.9% knew lack of exercise as risk factors of myocardial infarction.[7] Similarly the knowledge of community people of eastern Nepal towards risk factors of CVDs was found average only (correct response score 50-70%) and 30% of people were not aware that CVDs are preventable (n=458).[8]

CVDs are prevalent both in urban and rural areas. However, urban people are on higher risk of CVDs because of lifestyle. Thus, the aim of the study was to find out awareness regarding cardiovascular disease risk factors among people residing urban community of Lalitpur.

MATERIALS AND METHODS

Cross-sectional analytical study was conducted among people (18 to 60 years) residing in Lalitpur Metropolitan City in May, June and July, 2021. Total 380 permanent residents were selected by non-probability purposive sampling technique. People who were medical professionals were excluded from the study.

Setting of the study In Lalitpur Metropolitan city, there were total 29 wards. Pinchhen, Lohala, Tanani, and Bhindyolachhi toles of Lalitpur Metropolitan city (LMPC) selected for the study. The selected toles belonged to ward no. 8, 9, 11 and 12, respectively. These toles lie around 5 kilometer south from Tribhuvan International Airport, inside the Ring Road and is inhabited by Newars (Jyapus) who shares the culture and tradition. The residents who were living in that area temporarily were excluded from the study.

Data collection technique and instruments

The data collection tool in the study consist of two sections.

Section 1: Socio-demographic information

Selected socio-demographic information such as age, gender, educational status, marital status, employment status, and any cardiovascular diseases suffering from were collected.

Section 2: Awareness on CVD risk factors

Data was collected using structured interview questionnaire "Cardiovascular Disease Risk Factors Knowledge Level Scale (CARRF-KL)" developed by Arıkan et al. [9] Permission to use the questionnaire had been obtained from the author. It had been already used in Nepal for the community people with the Nepali translation. Thus, in this study the same Nepali version was used.[8] There were 28 questions for assessment of awareness of CVD risk factors. The first 4 statements examine the factors like characteristics of CVD, prevention and age; 15 statements (items 5, 6, 9-12, 14, 18-20, 23-25, 27, 28) examine the risk factors and 9 items (items 7, 8, 13, 15, 16, 17, 21, 22, 26) examine the outcome of changes in risk behaviors. The responses were classified as "yes", "no" and "don't know". A correct answer was given one score and an incorrect /don't know answer was given 0 score. The total score was 28. The expressions in six of the sentences in the scale were false (items 11, 12, 16, 17, 24 and 26). These items were coded in reverse order as compared to the others. The highest total score that could be obtained from the scale is 28. Cronbach's alpha value of the scale was 0.768.

Scoring

The total score was categorized as poor (less than 50%), average (50-70%) and good (more than 70%) awareness.[8]

Ethical Consideration

Ethical approval was obtained from Institutional Review Committee of Patan Academy of Health sciences (PAHS) prior to data collection (Ref:nrs2105141522). Written approval from Chairman of ward number 8, 9, 11 and 12 of Lalitpur was obtained for data collection. Informed verbal consent of respondents was taken before data collection. The data in this study were kept anonymous to respect privacy. Confidentiality was maintained by using the study findings for research purposes only.

Data collection procedure

Telephone interview was done because of COVID-19 pandemic to prevent the spread of infection. The personal phone numbers of respondents were collected from the respected tole offices. The researchers /enumerators called to the people using those phone numbers. Those who received the call and agreed to participate in the study was interviewed. The researchers /enumerators read the questions/statements from questionnaire, asked for their response and put tick in the questionnaire which was already coded for the each respondent. The approximate time to complete the questionnaire was 15-20 minutes.

Data processing software

Statistical Package for the Social Science (SPSS) version 16 was used for data analysis.

All the data were checked for completeness. Descriptive statistics (frequency, percentage and mean) was used to describe the demographic data and find out the level of awareness. Inferential statistics (Chi-square test) was used to determine association between socio-demographic information (age, gender, marital status, educational status, and employment status) and awareness on CVDs risk factors according to nature of

data. A p-value was set at 0.05 to be statistically significant.

RESULTS

Socio-demographic information

Out of 380 respondents, 50.8% were female and 49.2% were male. Twenty nine percent respondents were in between the age of 38 to 47 years. The Mean age ± SD was 40.7±11.4 years. Among them, 79.2% were married. Regarding educational status, most of them (43.4%) had secondary level education. Most (42.0%) respondents were self-employed. Fifty three (13.9%) were suffering from cardiovascular disease, among them 92.4% were suffering from high blood pressure and 7.5% were suffering from heart disease. (Table 1).

Table 1: Socio-demographic Information of Respondents N= 380.

Socio-demographic Information	Number	Percent
Age		
18-27 years	59	15.5
28-37 years	85	22.4
38-47 years	109	28.7
48-57 years	107	28.2
>57 years	20	5.3
Mean age ± SD, in years 40.7±11.4 years		
Gender		
Female	193	50.8
Male	187	49.2
Marital Status		
Married	301	79.2
Unmarried	70	18.4
Widow/Widower	8	2.1
Divorced/Separate	1	0.3
Educational status		
Illiterate	29	7.6
Can read and write	56	14.7
Primary level	17	4.5
Secondary level	165	43.4
Bachelor level	87	22.9
Master and above	26	6.8
Employment Status		
Self employed	160	42.0
Housewife	88	23.2
Professionals	68	17.9
Unemployed	57	15.0
Retired	7	1.8
Having cardiovascular disease		
No	327	86.1
Yes	53	13.9
Name of cardiovascular disease (n=53)		
High Blood Pressure	49	92.4
Heart disease	4	7.5

Findings related to awareness on cardiovascular diseases (CVD) risk factors

Regarding the level of awareness, 38.7% had good awareness, 51.1% had average awareness and 10.3% had poor awareness on CVD risk factors. (Table 2)

Table 2: Respondents' awareness level on cardiovascular diseases risk factors N=380.

Level of Awareness	Number	Percent
Poor awareness (Score less than 14)	39	10.3
Average awareness (score between 14-20)	194	51.1
Good awareness (score more than 20)	147	38.7

Among respondents who have cardiovascular disease, 41.5% had average awareness and 52.8% had good awareness. Likewise, 52.6% and 36.4% respondents who do not have cardiovascular disease had average and good awareness respectively. (Table 3)

Table 3: Level of awareness among people who have and who do not have cardiovascular disease N=380.

Level of awareness	People who have cardiovascular disease. (n=53)	People who do not have cardiovascular disease. (n=327)
	n (%)	n (%)
Poor awareness (score less than 14)	3 (5.7)	36 (11.0)
Average awareness (score between 14-20)	22 (41.5)	172 (52.6)
Good awareness (score more than 20)	28 (52.8)	119 (36.4)

There was significant association between gender, educational status, employment status and level of awareness on CVDs risk factors (p-value 0.00, 0.007, and 0.034 respectively). But there was no significant association between age, marital status and level of awareness on CVDs risk factors (p-value 0.092 and 0.518 respectively) (Table 4)

Table 4: Association between demographic variables and level of awareness N=380.

Socio-demographic Information	Awareness Level				Chi-Square value	P-Value
	Average to good awareness level		Poor awareness level			
	Number	Percent	Number	Percent		
Age						
18-27 years	49	83.1	10	16.9		
28-37 years	80	94.1	5	5.9		
38-47 years	102	93.6	7	6.4	7.982*	0.092
48-57 years	92	86.0	15	14.0		
>57 years	18	90.0	2	10.0		
Gender						
Female	161	83.4	32	16.6	16.994	0.00
Male	180	96.3	7	3.7		
Marital Status						
Married	270	89.7	31	10.3		
Unmarried	64	91.4	6	8.6	1.317*	0.518
Widow/Widower/Divorced	7	77.8	2	22.2		
Educational status						
Illiterate	27	93.1	2	6.9		
Can read and write	43	76.8	13	23.2		
Primary level	17	100.0	-	-	14.230*	0.007
Secondary level	148	89.7	17	10.3		
Bachelor and above	106	93.8	7	6.2		
Employment Status						
Self-employed	149	93.1	11	6.9		
Housewife	72	81.8	16	18.2	8.643	0.034
Professionals	63	92.6	5	7.4		
Unemployed/Retired	57	89.1	7	10.9		

***Note:** Likelihood ratio value has been used because cell value was less than 5.

Regarding risk factors of CVDs, only 58.4% respondents knew that a family history of CVD increases the risk of having heart disease and only 37.1% knew that CVDs can be prevented. Majority (95.5%) respondents stated smoking is a risk factor for heart disease but 10.0% did not know the risk of developing heart disease is reduced when smoking is stopped.

Regarding diet, majority (93.4%) answered correctly that it is beneficial to eat 2-3 portions of fruit and 2 portions of vegetable daily and 67.6% believed that it is harmful to eat red meat more than 3 times a week. Similarly, 88.9% knew that eating salty food lead to increase in blood pressure. (Table 5)

But, 38.2% and 49.2% respondents did not know that fatty meals increase the cholesterol level in blood and fats that are solid at room temperature are harmful for heart health. Among them, 85.0% stated the overweight individuals have higher risk of heart disease. Regarding

exercise, 93.9% stated correctly that regular exercise reduces the risk of heart disease but 84.2% respondents answered incorrectly that slow walking and wandering are also considered as exercise. Most of respondents (90.8%) knew that stress, sorrow, and burden increase the risk of heart disease and 90.0% answered high blood pressure is a risk factor for heart disease. (Table 5).

Most of (84.2%) answered correctly that high cholesterol is a risk factor for heart disease but 63.2% did not know that good cholesterol (HDL) is beneficial for heart health. More than on quarter (29.2%) respondents did not know that diabetes is a risk factor for heart disease but 70.3 % considered that the risk of heart disease can be reduced with blood glucose control. (Table 5).

Table 5: Respondents' response on awareness on Cardiovascular Diseases risk factors related statements N=380.

S. N.	Items	Correct response		Incorrect response	
		Number	Percent	Number	Percent
1	A person always realizes if he/she has a heart disease	69	18.2	311	81.8
2	A family history of CVD increases your risk of having heart disease.	222	58.4	158	41.6
3	Elderly people are at a higher risk for heart diseases	269	70.8	111	29.2
4	Cardiovascular diseases can be prevented.	141	37.1	239	62.9
5	Smoking is a preventable cause of death and diseases in our country.	169	44.5	211	55.5
6	Smoking is a risk factor for heart disease.	363	95.5	17	4.5
7	The risk of developing heart disease is reduced when smoking is stopped.	342	90.0	38	10.0
8	It is beneficial to eat 2-3 portions of fruit and 2 portions of vegetable daily.	355	93.4	25	6.6
9	It is harmful to eat red meat more than 3 times a week.	257	67.6	123	32.4
10	Eating salty food lead to increase in blood pressure.	338	88.9	42	11.1
11	Fatty meals do not increase the cholesterol level in blood.	235	61.8	145	38.2
12	Fats that are solid at room temperature are beneficial for heart health.	193	50.8	187	49.2
13	A low carbohydrate and low fat diet is beneficial for heart health.	327	86.1	53	13.9
14	Over weight individuals have higher risk of heart disease.	323	85.0	57	15.0
15	Regular exercise reduces the risk of heart disease.	357	93.9	23	6.1
16	Risk can be reduced by exercising only in a gym.	261	68.7	119	31.3
17	Slow walking and wandering are also considered as exercise.	60	15.8	320	84.2
18	Stress, sorrow, and burden increase the risk of heart disease.	345	90.8	35	9.2
19	Blood pressure increases under stressful conditions.	364	95.8	16	4.2
20	High blood pressure is a risk factor for heart disease.	342	90.0	38	10.0
21	Blood pressure control reduces the risk of heart disease.	289	76.1	91	23.9
22	Medicines for high blood pressure should be used for a lifetime.	209	55.0	171	45.0
23	High cholesterol is a risk factor for heart disease.	320	84.2	60	15.8
24	There is a risk of heart disease if good cholesterol (HDL) is high.	140	36.8	240	63.2
25	There is a risk of heart disease risk if bad cholesterol (LDL) is high.	255	67.1	125	32.9
26	Every person with high cholesterol level is given medicine.	45	11.8	335	88.2
27	Diabetes is a risk factor for heart disease.	269	70.8	111	29.2
28	The risk of heart disease can be reduced in diabetic patients with blood glucose control.	267	70.3	113	29.7

DISCUSSION

These findings come from a cross-sectional analytical study conducted among 380 permanent residents of Lalitpur Metropolitan City of Kathmandu valley, Nepal. Findings showed that 38.7% had good awareness, 51.1% had average awareness and 10.3% had poor awareness on CVDs risk factors. This finding was supported by the study done in Eastern Nepal which revealed the knowledge of people was average only (50-70%).[8] But a study conducted among University students of Turkey showed the low knowledge mean CARRF-KL scores (13.97 ± 5.2)[10] and in China, 56.9% participants' knowledge was poor (scoring 0-7). [11] But, 98.0% had average knowledge in India on CVDs risk factors. [12]

There was significant association between gender, educational status, employment status and level of awareness on CVDs risk factors (p-value 0.00, 0.007, and 0.034 respectively). But there was no significant association between age, marital status and level of awareness on CVDs risk factors (p-value 0.092 and 0.518 respectively). But a study done in Italy revealed

that marital status (OR = 2.53; 95% CI 1.18–5.45) and educational status (OR = 0.57; 95% CI 0.36–0.89) was statistically associated with correct knowledge of CVDs main risk factors.[13]

This study revealed that 58.4% respondents believed that a family history of CVD increases the risk of having heart disease. The following studies support the findings of the present study: 437(39.0%) Chinese respondents[11] and 48 (43.6%) of Pakistani people had this knowledge.[5]

About 37.0% knew that CVDs can be prevented. This finding is inconsistent with the result of the study of Eastern Nepal in which 307 (65.6%) respondents stated that CVDs can be prevented.[8]

In Nepal, 17.6% people of periurban area had smoking habit which is the major risk factor for cardiovascular disease.[3] In this current study, 95.5% and 84.2% respondents stated smoking and high cholesterol is a risk factor for heart disease. Similarly, a study done in Italy, 89.4% and 74.7% of people correctly identified smoking and high cholesterol level as risk factors for CVDs.[13]

This study revealed that, about eighty nine (88.9%) respondents considered eating salty food lead to increase in blood pressure which is the risk factor for CVDs. Similar finding revealed in a study done in Italy where 67.5% people identified that reducing dietary salt intake is necessary for reducing the risk of getting CVDs.[13] But only 244 (31.2%) respondents of Pokhara.[14] and 186 (93.0%) respondents of Chitwan,[15] Nepal had knowledge about this.

A study findings of Nepal showed that, 10.1% rural population [16] and 21.0% of urban population [3] had insufficient physical activity which is the risk of CVDs. But in this study, 93.9% respondents stated that regular exercise reduces the risk of heart disease. Similarly, about ninety percent people of Eastern Nepal [8] also knew the importance of physical activity on cardiac health.

Ninety percent respondents of this study stated correctly that high blood pressure is a risk factor for heart disease. Similarly, 306 (69.5) of people of Cameroon [17] and 601 (75.3%) of Italian people had knowledge about this. High blood pressure is common problem among people. About 281 (26.5%) of 25-74 year urban women of Germany [18] and 69 (8.3%) of Italian people [13] had high blood pressure as risk factor of CVDs.

Regarding diabetes as risk factors, 70.8% were aware about this but 29.2% did not know about this. The following studies support the findings of the present study: 283 (60.5%) of people [8] of Eastern Nepal and 693 (60.8) people of Cameroon [17] had also aware as diabetes is a risk factor for heart disease.

CONCLUSION

Based on the findings of our study, it can be concluded that the awareness on CVDs risk factors among urban community people was average. In addition, those who had CVDs had more awareness towards risk of CVDs suggesting that there is a need to run awareness program to the community people towards risk of CVDs for the prevention of the disease and promotion of healthy lifestyle.

ACKNOWLEDGMENT

We would like to thank all the respondents who participated in this study.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no competing interest.

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