Original Article

Awareness of Cardiovascular Health among Adults Residing in a Municipality in Kathmandu District, Nepal

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ABSTRACT

Background: Cardiovascular diseases are the leading cause of high disability adjusted life years and premature death, accounting disability among 43% of cases. If there is public awareness, most of the cardiovascular diseases can be prevented with modification of behavioral risk factors. Therefore, this study was conducted to find out the peoples' awareness on cardiovascular health.

Methods: A cross-sectional design was used. Data was collected using an in-person interview technique among randomly selected 236 adults residing in Budhanilkantha Municipality of Kathmandu District. Semi-structured interview schedule based on WHO Stepwise approach and literature review was used to collect data. Data analyzed using descriptive statistics (frequency, percentage, median, Inter Quartile Range) and inferences were drawn with an application of the chi-square test, and Fisher's exact test.

Results: Among 236 participants, most (85.6%) of the adults had an adequate level of awareness regarding cardiovascular health. However, around 80% of them were unaware of radiating pain as a symptom of heart attack and around 40% of adults did not recognize high blood sugar and dyslipidemia as risk factors of cardiovascular disease. Awareness of cardiovascular health was significantly associated with educational level ($p<0.001$), ethnicity ($p=0.021$), self-reported morbidities ($p=0.044$) and family history of morbidities ($p<0.001$).

Conclusion: Although adults were aware of cardiovascular health, most of them did not know that control of blood sugar and blood cholesterol are necessary to maintain cardiovascular health. Hence, awareness programs targeting these aspects would be beneficial.

Keywords: Community; Heart Disease; Knowledge; Kathmandu; Nepal

ARTICLE INFORMATION

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INTRODUCTION

Around 17.9 million people die annually due to cardiovascular diseases (CVDs) worldwide, in which heart attack and stroke account for 85% of those deaths.[1] Although most of the cardiac diseases are preventable, CVDs burden is increasing in low- and middle-income countries, occupying more than three fourths of diseases.[1]Among Nepalese population, CVDs have become a major health problem leading to high disability-adjusted life years (DALY) and premature death.[2]

Though, heart attack and stroke are fatal diseases, 80% of heart disease and stroke are preventable.[1] If there is public awareness regarding behavioral risk factors, there would be modification on risk behavior. [2] However, studies have shown that only 57.8% people are aware regarding preventive measures of heart

diseases.[3] In Nepal, adults account for 45.89% of population,[4] if they are aware, it could work as a crucial healthcare instrument.[5] Therefore, this study was conducted to assess the awareness of cardiovascular health among adults residing in a community of Nepal.

MATERIALS AND METHODS

A cross-sectional study was conducted among 236 adults residing in Budhanilkantha Municipality, Nepal. Data was collected from 22nd September to 19th October 2019 after obtaining ethical clearance from the Institutional Review Committee (IRC) of Institute of Medicine, Tribhuvan University with Reference no.128 (6-11) ^{E2}076/077. Administrative approval for data collection was obtained from the Health Section Department of Budhanilkantha Municipality and ward offices of the selected wards.

Adults aged 20-60 years, who were able to communicate in Nepali language were included in this study. Sample size was calculated by using Cochran formula ($n= Z^2pq/d^2$ where, $p=0.578$[3] therefore, $n = (1.96)^2*0.578*0.422/ (0.08)^2$. Adding design effect for cluster sampling obtained sample size was multiplied by 1.5 and assuming 8% non-response rate sample size for the study was 236.

Multi-stage sampling technique was used, where the Primary Sampling Unit (PSU) of this survey was a ward (an administrative unit in a Municipality). Out of 13 wards, five wards were selected by a lottery method. Individual Toles in Ward were considered as clusters and those clusters were taken as the secondary sampling unit (SSU). A list of Toles of those five wards was obtained from the respective ward office then two Toles was selected from each of the sampled wards using lottery method leading to the selection of 10 Toles. Then area was mapped and each household was assigned with the help of members of Tole development committee and Female Community Health Volunteers (FCHV). Proportionate number of households was selected from each cluster then visited using systematic random sampling. Among eligible population, one respondent either male or female was selected from each household who was available at the time of interview. If there were more than one family residing in a same house then one family was selected by simple random sampling.

Semi-structured interview schedule was developed using WHO STEP wise Instrument Version 3. 2. Part I questionnaire measured socio-demographic information of the respondents. Part II questionnaire measured awareness of cardiovascular health of the respondents. There was a total of 52 questions. Each correct response carried 1 mark.

Questionnaires were constructed in English and then translated to colloquial Nepali language with the help of Nepali language experts. Then the instrument was pretested among 23 adults. The Cronbach alpha value of the instrument was 0.612 for Dichotomous question (Yes/No) and 0.713 for (Yes/No/Don't know). Before data collection, informed consent was taken to respect their right to self –determination and confidentiality was ensured beforehand and was maintained throughout the study as no name was mentioned in the obtained information. In-person interviews were taken in the respondents' home as per their convenience. WHO Show cards were used to clarify the questions.

Distribution of the data were explored and was found that the data does not follow normal distribution (Kolmogorov-Smirnov test, $p < 0.001$). Percentage, Median score and Inter Quartile Range were calculated. Chi-square test and Fishers' exact test were used to examine the association between the selected variables under study.

RESULTS

The median age of the respondents was 35 years with interquartile range 22 - 45 years. More than half (54.7%) were female and 79.7% were married, and almost all (90.6%) could read and write. Regarding occupation, 34.7% were self-employed, 18.2% of the respondents had self-reported morbidities, and 39% had family history of morbidities. (Table 1).

Table 1: Socio Demographic Characteristics of the Respondents (n=236)

**Unmarried and widow, †Madhesi & Thakuri,*

Characteristics	Number	Percentage
Age (in completed years)		
20-29	65	27.5
30-39	79	33.5
40-49	50	21.2
50-59	37	15.7
60-69	5	2.1
Sex		
Female	129	54.7
Male	107	45.3
Marital Status		
Married	188	79.7
Single*	48	20.3
Ethnicity		
Janjati	115	48.7
Brahmin/Chhetri	103	43.6
Dalit	12	5.1
Others†	6	2.6
Educational status		
Cannot read and write	22	9.3
Can read and write	214	90.7
Informal	13	6
Basic	37	17.2
Secondary	87	40.6
University	77	35.9
Occupation		
Self-employed	82	34.7
Service	69	29.2
Home-maker	48	20.3
Agriculture	8	3.4
Others‡	29	12.3
Self-reported Morbidities §	43	18.2
Hypertension	38	88.37
Diabetes Mellitus	8	18.60
Dyslipidemia	7	16.27
Family history of Morbidities§	92	39
Hypertension	66	71.7
Diabetes Mellitus	19	43.47
Dyslipidemia	3	11.97

‡student, unemployed and retired §multiple response

Almost all respondents (94.9%) answered that having a healthy diet; yoga and meditation (94.1%) were important to maintain cardiovascular health, whereas, (53.8%) of the respondents answered that maintaining normal blood sugar is necessary for maintaining cardiovascular health. Regarding oil consumption, almost all (91.5%) respondents identified that vegetable oil is best. Most of the respondents (87.7%) answered that the recommended days (≥5 days/week) are necessary for cardiovascular health (Table 2).

Majority of the respondents (74.2%) knew chest pain as symptoms of heart attack, whereas least (19.5%) knew radiating pain to jaw as a symptom of heart attack. Moreover, least (17.8%) respondents disagreed to the negative response that sudden leg pain is the warning sign of heart attack. Majority of the respondents answered arm weakness (80.5%); facial drooping (75%) as a stroke symptom. However, few (14%) disagreed to the negative response that chest pain is the warning sign of stroke. Almost all (94.5%) respondents answered smoking as a cardiovascular disease risk factor whereas only 61% respondents identified dyslipidemia as a cardiovascular risk factor (Table 3).

Table 4 depicts that most (85.6%) of the respondents had adequate awareness (≥50%) and only 14.4% had inadequate awareness (<50%) regarding cardiovascular health with median awareness score percentage 78.70 and Interquartile Range 62.96-87.03 respectively.

The association between the awareness of cardiovascular health and socio-demographic variables were evaluated. Statistically significant association were found between awareness of cardiovascular health with educational level, ethnicity, self-reported morbidities and family history of morbidities at 5% level of significance. Respondents who could read and write knew more about cardiovascular health than those who could not read and write ($p<0.001$). Knowledge was higher among Brahmin/ Chhetri than other ethnic groups ($p=0.021$). Similarly, Respondents with history of CVDs had higher knowledge ($p=0.044$) and those who had family history of CVDs were more aware of cardiovascular health ($p<0.001$).(Table 5).

Table 2: Respondents' Awareness on Cardiovascular Health (n=236)

Variables	Number	Percentage
Cardiovascular health components*		
Healthy diet	224	94.9
Yoga and Meditation	222	94.1
Avoiding smoking	220	93.2
Avoiding alcohol intake	218	92.4
Physically active	216	91.5
Normal body weight	196	83.1
Normal blood pressure	186	78.8
Normal blood cholesterol	133	56.4

Normal blood sugar	127	53.8
Recommended fat for Cardiovascular Health		
Vegetable oil (Mustard, Maizan, Soyabean, Sunflower)	216	91.5
Adequate intake (≥5servings) of fruits and vegetables daily)	154	65.3
Inadequate intake(<5servings) of fruits & vegetables daily)	82	34.7
Recommended days of Physical Activity/Week		
≥5 days/week	207	87.7
<5 days/week	29	12.3

**Multiple response*

Table 3: Respondents' Awareness on Cardiovascular Diseases

Variables	Number	Percentage
Heart Attack Symptoms*		
Chest pain	175	74.2
Breathing difficulty	170	72.0
Dizziness	146	61.9
Excessive Sweating	139	58.9
Loss of Consciousness	125	53.0
Radiating pain to Arm	47	19.9
Radiating pain to jaw	46	19.5
Sudden leg pain †	42	17.8
Stroke Symptoms*		
Arm weakness	190	80.5
Facial drooping	177	75.0
Speaking difficulties	164	69.5
Sudden severe dizziness	155	65.7
Sudden severe headache	135	57.2
Poor vision in one or both eyes	109	46.2
Sudden chest pain †	33	14.0
Cardiovascular disease risk factors*		
Smoking/Smokeless tobacco	223	94.5
Alcohol intake	220	93.2
Unhealthy diet	212	89.8
Excessive stress	202	85.6
Obesity/overweight	201	85.2
High blood pressure	192	81.4
Physical inactivity	191	80.9
Heredity	170	72.0
Old age	168	71.2
High blood sugar	148	62.7
Dyslipidemia	144	61.0

†negative response

Table 4: Level of Awareness Regarding Cardiovascular Health among Respondents.

Level of Awareness	Number	Percentage
Adequate (≥50%)	202	85.6
Inadequate (<50%)	34	14.4
Total	236	100.0

DISCUSSION

In this study, almost all (94.9%) adults identified a healthy diet as a component of cardiovascular health which is supported by the study done in Sri Lanka where almost all Sri Lankans [6] were aware of it. Knowledge of heart healthy diet among the respondents of present study might be due to availability of health facilities nearby and mass media as well. Similarly, around half of the adults (53.8%) knew that maintaining normal blood sugar is necessary to cardiovascular health. However, only one-third (33.8%) Nepalese were aware about it in another study.[3]This picture shows that awareness of maintaining blood sugar among Nepalese people has increased over time.

Similarly, present study reveals that 74.2% adults knew about chest pain as a heart attack symptom. This study finding is compatible with the study findings in Nepal[7] Bangladesh[8], Kuwait[9], and in Northern Ireland[10] where majority of the community people even though they have no any formal education regarding this topic know chest pain as a major symptom of heart attack. Similarly, the majority (80.5%) of the adults identified arm weakness as one of the stroke symptoms which is consistent with previous study findings. [11,12] However, studies in Bangladesh [8] and Kuwait [9] found fewer (55.7%) and (34.7%) respectively. This contrast might be due to time duration because these studies are done earlier. Regarding cardiovascular risk factors, in the present study, 94.5% adults stated smoking/smokeless tobacco as a risk factor of cardiovascular diseases. This finding is similar with the findings of studies in Lahore,[13] in Nepal, [14] in Lebnan,[15] in Nigeria,[16] in Malaysia[17] however another study in Saudi Arabia[18] found that fewer (26.1%) participants were aware of it, this states that people of Saudi Arabia residing in Jeddah have very limited knowledge regarding cardiovascular risk factors.

Table 5: Association between Level of Awareness on Cardiovascular Health and Selected Variables (n =236)

Variables	Level of Awareness		Total	χ^2	p-value
	Adequate n (%)	Inadequate n (%)			
Age Group					
20-40	133(85.8%)	22(14.2%)	155	0.348	0.897
41-60	69 (85.2%)	12(14.8%)	81		
Sex					
Male	90 (84.1%)	17(15.9%)	107		
Female	112(86.8%)	17(13.2%)	129	0.348	0.555
Education Level					
Cannot read and write	11 (50%)	11(50%)	22	24.926	**0.000***
Can read and write	191(89.3%)	23(10.7%)	214		
Ethnicity					
Janjati	91 (79.1%)	24(20.9%)	115	7.736	**0.021***
Brahmin/Chhetri	95(92.2%)	8(7.8%)	103		
Others#	16(83.3%)	2(11.1%)	18		
Occupation					
Service	62(87%)	7 (10.1%)	69	1.436	0.231
Non-service	140 (83.8%)	27(16.2%)	167		
Marital Status					
Married	165(87.8%)	23(12.2%)	188	3.539	0.060
Single+	37(77.1%)	11(22.9%)	48		
Self- Reported Morbidities					
Yes	41(95.3%)	2(4.7%)	43	4.058	**0.044***
No	161(83.4%)	32(16.6%)	193		
Family History of Morbidities					
Yes	90(97.8%)	2(2.2%)	92		**0.000****
No	112(77.8%)	32(22.2%)	144		

**p-value significance at α <0.05, ** Fisher's Exact Test; #Dalit, Madhesi and Thakuri, + Unmarried and Widow*

In this study findings, more than half (61%) adults stated dyslipidemia as a cardiovascular risk factor, which is congruous with previous findings [8,9],[19] however, another study has stated that 86.1% Lebanese knew dyslipidemia as a cardiovascular risk factors [15], which is higher than the present study. This difference might be due to the nature of samples taken as this present study is done in the general population and in Lebanon it was done among pharmacists. The findings of the present study showed that most (85.6%) of the adults had adequate awareness regarding cardiovascular health which is also supported by the previous studies done in Nepal.[7,14] However, only half (51%) Nigerians had good level of knowledge.[16] In this study, awareness regarding cardiovascular health was statistically significant with educational level (p<0.001); ethnicity (p=0.021); self-reported morbidities (p=0.044) and family history of morbidities (p<0.001) of the respondents. This finding coincides with the previous studies as there was significant association of educational level (<0.001) with the knowledge of cardiovascular disease[20] among Nepalese population. Similarly, in another study in Ireland respondents' knowledge of CVDs was associated with cardiovascular morbidities (p=0.005) and level of education (p=0.001) [10].

LIMITATION: This study was limited to adults living in *Budhanilkantha* municipality. Therefore, findings of this study may not be generalized to other settings.

CONCLUSION

Although adults are aware of cardiovascular health, most of them don't know that control of blood sugar and blood cholesterol are necessary to maintain cardiovascular health. Some adults are unaware of the major symptom of heart attack i.e., chest pain. Adults are relatively more aware of stroke symptoms than heart attack symptoms. Despite adequate awareness about cardiovascular health components, still adults are

unaware of WHO recommended number of fruits and vegetables intake. Therefore, Health section of the Municipality might consider implementing health awareness programs including all the components of cardiovascular health and signs of fatal cardiovascular diseases to prevent disability and death caused by delayed reaching to hospital.

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