

## **Awareness on Cardiovascular Disease Risk Factors among Nonteaching Staff of a Selected Medical and Health Sciences University, UAE. A Cross Sectional Study.**

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### **Abstract:**

#### **Back Ground:**

Cardiovascular Disease (CVD) Is The Major Cause Of Mortality And Represents A Significant Disease Burden In Populations Around The World. CVD Is Usually Associated With One Or More Risk Factors Tobacco Use, Unhealthy Diet, Physical inactivity, Weight Gain, Hypertension, Diabetes And Hyperlipidemia. Most Cardiovascular Diseases Can Be Prevented By Addressing These Behavioral Risk Factors. Awareness Of CVD, Its Associated Risk Factors And Adherence To Healthy Lifestyle Behaviour are An Important Aspect To Reduce Or Prevent The Occurrence Of CVDs.

#### **Methods:**

A Cross Sectional Study Was Carried Out To Determine The Level Of Awareness Regarding CVD Risk Factors Among 104 Non-Teaching Staff recruited By consecutive Sampling Method. A Standardized Self-Administered Questionnaire Was Used To Obtain Information Regarding Sociodemographic Data And the Heart Disease Fact Questionnaire (HDFQ) To Assess The Knowledge of Risk Factor Causing Heart Disease And The Link Between Diabetes And Heart Disease. Data Were Analyzed Using SPSS Version 26. Descriptive And Inferential Statistics Were Used To Analyze The Collected Data.

#### **Results:**

Majority (44.23%) Of The Study Participants Were Between The Age Group Of 35-44 Years And Male (77.9%). About 27% Participants Had High Level Of Awareness (Score >70), 31.73% Had Moderate (Score 50-69) And Nearly Half Of The Participants (41.34%) Had Low Level Of Awareness (Scored <50). This Study Identified That Between 24-44 Years And Married Individuals Had Highest Level Of Awareness. Smoking Was Identified As The Major Factor For Heart Disease 92(88.5%) Followed By High Cholesterol Level 93(89.4%). Doing regular Physical Activity Lowers A Person's Chance Of Getting Heart Disease Was Reported By 91(87.5%). Majority 86(82.7%) Were Aware That High Blood Pressure And Being Overweight Increases A Person's Risk For Heart Disease.

#### **Conclusions:**

The Present Study Found No Significant Association Between Demographic Variables And The Awareness Regarding Risk Factors Of Heart Disease. Findings Suggest the Need For Awareness Programs On Work Place. Creating Awareness Will Help Individuals In Early Recognition Of The Risk Factors And Adopt Healthy Life Style Practices To Prevent Cardiovascular Diseases.

**Key Words:** Cardiovascular Disease Risk Factor, Heart Disease Fact Questionnaire (HDFQ), Knowledge Level.

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## I. INTRODUCTION

Cardiovascular disease is one of the common health care issues and noticeable cause of morbidity and mortality worldwide. More than 15 million people die between the ages of 30 and 69 every year due to non-communicable disease (NCD). Among that 85% of the early deaths occur in low- and middle-income countries and 17.9 million people die annually only due to cardiovascular diseases. The major cause of CVD is atherosclerosis. It is characterized by an excessive accumulation of fatty substances and fibrous tissue in the inner layer of arterial blood vessel walls. These depositions obstruct and narrow the space of coronary blood vessels in a way that decreases blood flow to the heart [1]. There are many risk factors influence occurrence of CAD. It can be grouped as nonmodifiable and modifiable. Non-modifiable risk factors are age, gender, ethnicity, family history and genetics. Modifiable risk factors include high serum lipids, blood pressure and blood sugar, use of tobacco, less physical activity, weight gain, emotional states and elevated homocysteine level[2].

The symptoms of CAD can include chest pain and discomfort, shortness of breath, pain or discomfort in the hand and shoulder, fatigue, light-headedness, nausea or vomiting and cold sweat[3]. The predicted annual number of deaths occur due to cardiovascular diseases is increase to greater than 23 million by 2030 and greater than 34 million by 2060 worldwide[4]. The most important influencing factors of heart disease among individuals includes not following healthy diet, less physical activity, habits of using tobacco and alcohol. The effects of these influencing factors may cause increase body weight, blood pressure, glucose and cholesterol level[5][6][7]. The incidence of CVD was found to be higher among the individuals with raised blood pressure, tobacco habits, raised triglyceride levels, overweight and obese, unmarried, illiterate, unemployed and who had diabetes mellitus[8]. In addition consumption of food contains high carbohydrates, fat and salt is increased among individuals due to busy work schedules and easy availability of fast food restaurant especially in urban areas and it predisposes to higher prevalence of cardiovascular diseases. The research findings shown that greater than five million premature CVD deaths occur among men and 2.8 million among women are projected worldwide by 2025, which can be reduced to 3.5 million and 2.2 million, respectively, if risk factor targets for blood pressure, tobacco use, diabetes mellitus, and obesity are achieved[9].

Studies conducted in Nigeria and Ethiopia half of the participants demonstrated low cardiovascular risk factor awareness when compared to good level of knowledge[10][11]. Another study identified in Kuwait that only 29% of study participants could identify coronary heart disease as the commonest type and nearly 60% of participants were not able to identify it and two-fifths of participants were not knowing any symptoms of heart attack[12]. Furthermore, it was noted that 39.5% of Canadian workers were not able to identify even at least one CVD risk factors[13].

According to Global Heart & Circulatory Diseases[14] 141 in 14 people is living with a heart or circulatory disease globally and more than 4 in 5 deaths from heart and circulatory diseases are associated with preventable risk factors. Most of the cases the risks can be decreased with regular medical treatment and modification of lifestyle behavior. A study conducted in Lebanon[15] identified the prevalence of overweight 75.9%, hypertension (29.8%) and diabetes (22.8%). People's awareness of cardiovascular disease risk factors is very important for promoting the health behavior and life style changes. It was noted that risk of cardiovascular disease is most common among Indonesian adults aged  $\geq 40$  years. The incidence of CVD risk was greater in urban (31.6%), than in semi-urban (28.7%), and rural areas (26.2%)[16].

UAE is a multicultural country, where many health issues significantly contribute to morbidity and mortality. According to the WHO report of 2018 non-communicable diseases were estimated to account for 77% of total deaths with 40% due to cardiovascular diseases in UAE. It also has one of the highest age-standardized death rates for cardiovascular disease in the world, 308.9 per 100,000 for males and 203.9 per 100,000 for females. A study conducted in UAE reported that the most common medical history among the participants was hypertension (23%), Diabetes (23%), High cholesterol (18%) and obesity (40%). Awareness regarding cardiovascular disease and related modifiable risk factors is an important attribute to change the individual's behaviors and lifestyle practices. It also helps the individual to recognize the risk factors earlier and practice primary prevention measures. It cannot be denied that better practices prevent and reduce for the anticipation and reduction of cardiovascular disease involve understanding respondents' risk perceptions and their involvement in protective actions. Therefore, assessment of basic Knowledge of CVD is an essential component required to develop targeted educational programs. Research data of cardiovascular disease risk factor awareness among non-teaching faculty in UAE are lacking. Health care workers should provide appropriate awareness about healthy lifestyle changes like regular exercise, maintain normal weight and blood pressure and not consuming tobacco, which can reduce the risk of CVDs[17]. This study aim was to determine the level of awareness regarding cardiovascular disease risk factor among non-teaching staff of selected medical and health sciences university and to find an association between selected sociodemographic factors with their awareness of cardiovascular disease risk factors

## II. MATERIALS & METHODS

A descriptive cross-sectional study was conducted to assess the awareness on cardiovascular disease risk factors among non-teaching staff in selected medical & health sciences university, Ras al-Khaimah, UAE. Data collection was carried out from November to December 2022. An ethical approval for the study was obtained from institutional research ethical committee, RAK Medical & Health Sciences University, Ras Al Khaimah, UAE. The study utilized consecutive sampling and 104 non-teaching faculty participated in the study. The data collection tool had two sections. The section one was characteristics of study participants, includes age, sex, height, weight, highest level of education, marital status, nationality, occupation, history of disease, history of family heart disease, Sources of information on heart disease and its prevention. The section two consists of the validated Heart Disease Fact Questionnaire (HDFQ)[18]. The permission was obtained from the author through an email. The HDFQ questionnaire had 25 items with three options True, False and I don't know. These scores were classified as low level less than 50 score, 50-69 scores as moderate and score >70 as good of knowledge. The internal consistency was 0.77 as per Kuder-Richardson formula-20. The data were collected using a self-administered anonymous questionnaire and it was sent to the study participants via Google Link. The participants were reminded through an email and over telephone. The collected data was organized using Microsoft Excel and was analysed using Statistical Package for Social Sciences (SPSS) version 27. The categorical variables were expressed as frequencies, percentages. Mean, standard deviation and range were used to calculate response rate for knowledge in different categories of HDFQ. Chi-square test was applied to find out the association between knowledge of CVD risk factors and study participants characteristics. Statistical significance was set at  $P < 0.05$ .

## III. RESULTS

A total of 104 non-teaching faculty participated in this research study, whom 81% were males ranging between 18-60 years of age.

**Table 1:** Characteristics of study participants (N=104)

Personal characteristics	N	(%)
<b>Age (in years)</b>		
18-24	10	9.62
25-34	31	29.81
35-44	46	44.23
45-60	17	16.35
<b>Gender</b>		
Male	81	77.9
Female	23	22.1
<b>Highest level of education</b>		
Primary school	3	2.9
Secondary	12	11.5
High school	18	17.3
College/University	71	68.3
<b>Marital Status</b>		
Single	18	17.3
Married	86	82.7
<b>Nationality</b>		
Filipino	11	10.6
Indian	43	41.3
Nepali	05	4.8
Pakistani	16	15.4
Sri Lankan	07	6.7
Others	22	21.2
<b>Occupation</b>		
Manager	8	7.7
Executive	31	29.8
Office attendant	13	12.5
Security guard	8	7.7
House keeping	18	17.3
Any Others (specify)	26	25.0
<b>History of disease (Self-reported)</b>		
Heart disease	1	1.0
Diabetes Mellitus	5	4.8
Hypertension	6	5.8
None	83	79.8
I do not know	9	8.7
<b>Family history of heart disease</b>		
Yes	24	23.1

No	80	76.9
<b>Sources of information regarding heart disease and its prevention</b>		
Social media	53	51
Health worker	32	30.8
Friend	5	4.8
Work place	14	13.2

**Table 1** depicts that majority were males 81(77.9%) ranging from 18 to 60 years of age. Most of the participants (68.3%) had college/university education. More than half of the participants were married 86(82.7%) and most of them were from India 43(41.3%). Nearly one fourth of them managers and 31(29.8%) were working as secretaries. Among the participants 5(4.8%) diabetes Mellitus, 6(5.8%) Hypertension while majority 83(79.8%) had no history of chronic diseases with 24(23.1%) family history of heart disease. More than half 53(51%) of the participants had received information on heart disease and its prevention through social media and 32(30.8%) from health care worker.

**Table 2:** Response of the participants to the Heart Disease Fact Questionnaire (N=104)

S.No	Questions	Correct		Incorrect		I don't know	
		Fre	%	Fre	%	Fre	%
1.	A person always knows when they have heart disease	23	22.11	57	54.8	24	23.1
2.	If you have a family history of heart disease you are at risk for developing heart disease	59	56.7	22	21.2	23	22.1
3.	The older a person is, the greater their risk of having heart disease	65	62.5	24	23.1	15	14.4
4.	Smoking is a risk factor for heart disease	92	88.5	6	5.8	6	5.8
5.	A person who stops smoking will lower their risk of developing heart disease	69	66.3	14	13.5	21	20.2
6.	High blood pressure is a risk factor for heart disease	86	82.7	6	5.8	12	11.5
7.	Keeping blood pressure under control will reduce a person's risk for developing heart disease	80	76.9	6	5.8	18	17.3
8.	High cholesterol is a risk factor for developing heart disease	93	89.4	1	1.0	10	9.6
9.	Eating fatty foods does not affect blood cholesterol levels	24	23.1	67	64.4	13	12.5
10.	If your "good" cholesterol (HDL) is high you are at risk for heart disease:	25	24.03	47	45.19	32	30.76
11.	If your "bad" cholesterol (LDL) is high you are at risk factor for heart disease:	64	61.53	7	6.7	33	31.7
12.	Being overweight increases a person's risk for heart disease:	86	82.7	6	5.8	12	11.5
13.	Regular physical activity will lower a person's chance of getting heart disease	91	87.5	7	6.7	6	5.8
14.	Only exercising at a gym or in an exercise class will help lower a person's chance of developing heart disease	22	21.2	66	63.5	16	15.38
15.	Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease:	79	76.0	11	10.6	14	13.5
16.	Diabetes is a risk factor for developing heart disease	70	67.3	12	11.5	22	21.2
17.	High blood sugar puts a strain on the heart:	72	69.2	9	8.7	23	22.1
18.	If your blood sugar is high over several months it can cause your cholesterol level to go up and increase your risk of heart disease:	59	56.7	11	10.6	34	32.7
19.	A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control:	61	58.7	11	10.6	32	30.8
20.	People with diabetes rarely have high cholesterol	15	14.42	41	39.4	48	46.2
21.	If a person has diabetes, keeping their cholesterol under control will help to lower their	58	55.8	13	12.5	33	31.7

	chance of developing heart disease:						
22.	People with diabetes tend to have low HDL (good) cholesterol:	25	24.0	24	23.1	55	52.9
23.	A person who has diabetes can reduce their risk of developing heart disease if they keep their blood pressure under control:	62	59.6	15	14.4	27	26.0
24.	A person who has diabetes can reduce their risk of developing heart disease if they keep their weight under control:	62	59.6	17	16.3	25	24.0
25.	Men with diabetes have a higher risk of heart disease than women with diabetes:	42	40.4	18	17.3	44	42.3

**Table 2** illustrates that the highest number of participants responded smoking 92(88.5%) and high cholesterol 93(89.4%) has a risk factor for developing heart disease. Majority responded regular physical activity lower a person's chance of getting heart disease 91(87.5%). More than 80 participants responded high blood pressure and being overweight increase the person's risk for heart disease 86(82.7%) and that keeping blood pressure under control reduces a person's risk for developing heart disease 80(76.9%). About 50(48.07%) participants did not know that people with diabetes tend to have low HDL (good) cholesterol 55(52.9%) and that men with diabetes have a higher risk of heart disease than women with diabetes 44(42.3%). More than 79(76%) participants responded correctly that walking and gardening lower a person's chance of developing heart disease, while high blood sugar puts a strain on the heart 72(69.2%) and diabetes is a risk factor for developing heart disease 70(69.3%). About 57(54.8%) participants responded incorrect answer for a person always knows when they have heart disease. Only exercising at a gym or in an exercise class will help lower a person's chance of developing heart disease 66(63.5%), eating fatty foods does not affect blood cholesterol levels 67(64.4) and If your "good" cholesterol (HDL) is high you are at risk for heart disease 47(45.19).

**Fig 1. BAR chart Comparison of healthcare score**

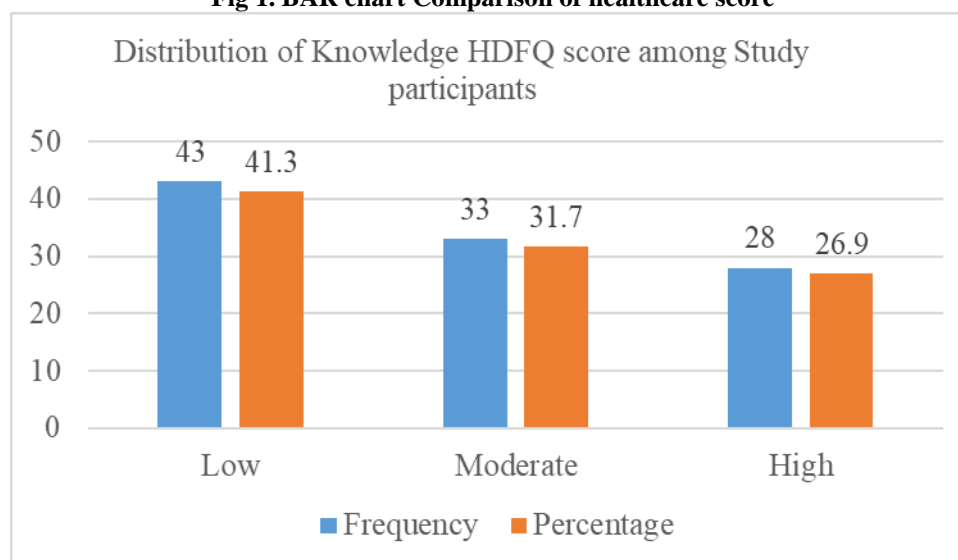


Fig 1 Compares total awareness of cardio vascular disease risk factor of total no of participants 28(26.92%) participants had high level of awareness having a score >70, 33(31.73%) participants had moderate awareness with a score between 50-69 and 43(41.34%) had low awareness scored <50.

**Table 3:** Characteristics of study participants associated with knowledge regarding heart disease risk factors with a high HDFQ score compared to low HDFQ score

Variables	Category	High level of knowledge (%)	Moderate level of knowledge (%)	Low level of knowledge (%)	Chi square value	P Value
Age	18-24	5(50)	3(30)	2(20)	6.412	.388
	25-34	10(31.3)	9(28.1)	13(40.6)		
	c.35-44	10(23.3)	16(37.2)	17(39.5)		
Gender	Male	24(29.6)	24(29.6)	33(40.7)	1.539	.468
	Female	4(17.4)	9(39.1)	10(43.5)		
Highest level of education	Primary school	0	2(66.7)	1(33.3)	11.113	.078
	Secondary	4(33.3)	5(41.7)	3(25)		
	High school	5(27.7)	4(22.2)	9(50)		
	College/University	19(26.7)	22(31)	30(42.2)		
Marital Status	Single	5(27.8)	4(22.2)	9(50)	1.020	0.608
	Married	23(26.7)	29(33.7)	34(39.5)		
Nationality	Filipino	0	3(27.3)	8(72.7)	14.031	.165
	Indian	12(27.9)	12(27.9)	19(44.2)		
	Nepali	1(20)	3(60)	1((20)		
	Pakistani	4(25)	5(31.3)	7(43.8)		
	Sri Lankan	2(28.6)	1(14.3)	4(57.1)		
	others	9(40.9)	9(40.9)	4(18.2)		
Occupation	Manager	1(12.5)	2(25)	5(62.5)	18.274	.06
	Executive/Secretary	7(22.6)	11(35.4)	13(42)		
	Office attendant	2(15.4)	7(53.8)	4(30.8)		
	Security guard	2(25)	3(37.5)	4(37.5)		
	House keeping	8(44.4)	2(11.1)	8(44.4)		
	Any Others (specify)	5(19.2)	8(30.8)	13(50)		
Heart disease (Self-Reported)	Yes	1(25)	3(75)	0	6.365	.166
	No	23((25.3)	27(29.7)	41(45.1)		
	I don't know	4(44.4)	3(33.3)	2(22.2)		
Diabetes Mellitus (Self-reported)	Yes	0	1(20)	4(80)	5.546	.236
	No	25(27.2)	29(31.5)	38(41.3)		
	I don't know	3(42.9)	3(42.9)	1(14.3)		
Hypertension (Self-reported)	Yes	2(33.3)	0	4(66.7)	4.048	.407
	No	22(25.3)	29(33.3)	36(41.4)		
	I don't know	4(36.4)	4(36.4)	3(27.3)		
Family history of heart disease	Yes	4(16.7)	6(25)	14(58.3)	3.842	.130
	No	24(30)	27(33.8)	29(36.3)		
Sources of information regarding heart disease and its prevention	Social media	16(30.2)	18(34)	19(35.8)	2.905	.832
	Healthworker	7(21.9)	8(25)	17(53.1)		
	Friend	1(20)	2(40)	2(40)		
	Work place	4(28.6)	5(35.7)	5(35.7)		

Table 3 shows that none of the characteristics of study participants were significantly associated with the participants knowledge/awareness regarding risk factors associated with heart diseases.

**Table4:**Response rate for knowledge in different categories of HDFQ

HDFQ Particulars			Responses			
Area of knowledge	Items	Possible Range	Minimum	Maximum	Mean ± SD	Mean Percentage
Role of age, gender and family history	1,2,3,25	0-4	0	4	1.37 ±.872	8.75%
Risk factors for CVD	4,6,8,12,16,18	0-6	0	6	4.72±1.484	30.02%
Role of exercise in prevention	13,14,15	0-3	0	3	2.28±.877	14.55%
Role of diet and cholesterol level in CVD	9,10,11,17,20,22	0-6	0	6	3.00±1.734	19.08%
Role of therapeutic measures and life style intervention for CVD	5,7,19,21,13,24	0-6	0	6	3.788±2.0177	24.09%

**Table4.**the participants gave least responses for questions referred to Role of age, gender and family history (8.75%) followed by Role of exercise in prevention (14.55%), Role of diet and cholesterol level in CVD (19.08), Role of therapeutic measures and life style intervention for CVD and highest correct response were obtained for risk factors for CVDs (30.02%)

#### IV. DISCUSSION

This research study found that nearly half of the study participants 43(41.34%) had low level of knowledge regarding cardiovascular disease risk factors. These findings supported by a study conducted in Nigeria identified that the majority of the university workers had low level of knowledge of heart disease risk factors [19][20]. 19,20 Though the participants work in the health sciences university majority of them had low awareness. The reason behind this would be the participants are not getting the chance to attend any conferences, seminars or awareness campaign. This shows that the university should encourage the non-teaching staff to attend health awareness program and arrange health talk by the health care experts.

The more number of the participants (93%) aware that increased level of cholesterol is a risk factor for developing heart disease followed by smoking (92%) similar findings identified by Ahmed and Al-Shami, [21] 21 regular exercise will reduce a person's chance of getting heart disease (91%), high blood pressure (86%) and being overweight increases a person's risk for heart disease (86%). More than half of the participants (64.4%) could identify that eating fatty foods affects blood cholesterol level, person who has diabetes can reduce their risk of developing heart disease if they keep their blood pressure and weight under control (59.6%). However, the more number of present study participants were not aware that people with diabetes have high cholesterol (85.6%) and also the role of good cholesterol (75.95%).

A study revealed that knowledge level between who had history of heart disease, diabetes mellitus and hypertension and who was not having the diseases is almost same. Diabetes is a complex disorder and are at risk for development of CAD that needs constant attention to diet, exercise, glucose monitoring and medication to achieve good glycemic control [22]. 22 Consistent with the finding of this study the other research identified that almost one fifth 55(19.2%) participants were not knowing the knowledge of keeping blood pressure under control reduces the risk of developing CVS [23]. 23

This study identified there was no significant association between age, gender, highest level of education, marital status, nationality, Occupation, History of disease, family history of heart disease and Sources of information obtained on heart disease and its prevention. This is in contrast the significant association reported by previous study conducted in Kuwait and Ethiopia [24][25]. 24,25 This study reveals that awareness on cardiovascular disease risk factors was higher among the age group between 24-44 years and married people than others. The higher awareness among young adult and middle age group and married participants indicate that they may accessed information by interacting with other people and spending more time on social media. Both male and female participants relatively had low awareness. Similar findings identified a study conducted in Austria [26]. 26 In contrast, the research findings revealed that both male and female participants had high knowledge over health risk factors like cholesterol [27]. 27

The study revealed that the majority of participants from each educational level had low awareness. Comparing to those who had primary or secondary school education the participants who attained college/university education had higher level of awareness on cardiovascular disease risk factors. This finding is

supported by Akintunde et al and Ansa[26],<sup>20</sup>that the individuals who obtained higher degrees including academic staff had less awareness about heart disease risk factors. The other study identified that there is a significant association between education and cardio vascular disease risk factors[28].<sup>28</sup>Interestingly, this present study revealed that few participants who attained secondary and high school education also had high awareness. These findings may be due to the participants spent more time in mass media during free hours and it could influence to get to know about cardiovascular disease risk factors. Awareness on cardiovascular disease risk factors was significantly lower among all the occupational level of non-teaching faculty. Recent study identified similar findings that people occupational status was not significantly associated with CVD risk factor knowledge[29].<sup>29</sup>This present study identified that the CVD risk factor awareness was low among participants who had family history of heart disease. In contrast the participants who is not having Family history of heart disease had high and low level of knowledge. Furthermore, the people those who received information on heart disease and its prevention through social media had higher knowledge than those who received from health care worker, friend and work place.

## V. CONCLUSION

Measuring awareness of knowledge on cardiovascular disease risk factors are an important role of primary health promotion and prevention of related diseases. Our results revealed that the awareness of cardiovascular disease risk factors among non-teaching staff is significantly low. Seminar on health talk and workshops should be organized in the university exclusively for non-teaching staff to increase awareness about cardiovascular disease risk factors. This finding of the study could be utilized to assess awareness on cardiovascular diseases of the patient who is attending the hospital for the treatment to prevent and reduce the occurrence of cardiovascular diseases thus reduce related mortality rate. The nursing interventions can include teaching about healthy dietary habits, health hazards of cigarette smoking, the importance of regular exercise and health checkup in order to promote health, minimize the risk of illness and prevent the occurrence of cardiovascular diseases. The nurse education program should prepare the nurses and nursing students to understand the importance of health risk assessment to promote health and prevent diseases. Nurse administrator can utilize this research findings to motivate the nurses to assess awareness of CVD among patients. Nurses should be encouraged to participate in community campaign to understand the importance of awareness program. The nurse administrators can motivate nurses to involve this nature of research to incorporate evidence-based research findings into practice. The number of research studies have been conducted among non-teaching faculty of medical and health sciences university is scanty. This research methodology and findings can be utilized by other researchers for further research.

### Conflict of interest

The authors declare no conflict of interest

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