



Original Research Article

## Women's Knowledge of Coronary Heart Disease Risk Factors and Prevention at Primary Care Level, Eastern Saudi Arabia

Nawal M. Al-Qahtani\*, Attia Z. Taha\*\*, Abdullah S. Aljoudi\*\*, Ahmed A. Bahnassy\*\*\*

\*Ministry of Health, Alkhobar,

\*\*University of Dammam, Dammam, Saudi Arabia

\*\*\*Faculty of Medicine, King Fahad Medical City, Riyadh, Saudi Arabia.

Corresponding Author: Dr. Attia Z. Taha, Associate Professor of Community Medicine, Department of Family & Community Medicine, College of Medicine, University of Dammam, P. O. Box 2114, Dammam 31451, Saudi Arabia.

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### ABSTRACT

**Background:** Worldwide, coronary heart disease (CHD) has an increasing role as a major cause of morbidity and mortality. Women's knowledge about CHD risk factors is inadequate.

**Objectives:** The aim of this study was to determine knowledge about coronary heart disease risk factors and preventive measures among women attending primary health care centers in Alkhobar city, Eastern Saudi Arabia.

**Methods:** A cross-sectional study was conducted among a random sample of 700 Saudi females ages 18 years and above, selected from five primary health care centers in Alkhobar city. Knowledge about coronary heart disease risk factors and preventive measures was evaluated by an interviewer-administered questionnaire.

**Results:** Regarding coronary heart disease risk factors, high consumption of fatty food was mentioned by 254 (36.3%) of the women, followed by smoking (249; 35.6%). Hypertension, diabetes mellitus and lack of physical exercise were mentioned by less than 30.0% of the women [202 (28.9%), 152 (21.7%) and 96 (13.7%) respectively]. Similarly the main preventive measures mentioned by women were low fat diet and smoking cessation [404 (57.7%) and 343 (49.1%) respectively]. Education, income, occupation, self-reported history of coronary heart disease and obesity were strong predictors of women's knowledge of coronary heart disease risk factors and preventive measures ( $p < 0.05$ ).

**Conclusion:** The study revealed poor knowledge of CHD risk factors among women. It is recommended that a comprehensive knowledge and preventive health education program for all women be implemented.

**Key Words:** Coronary Heart Disease, Knowledge, Primary Health Care, Saudi Arabia, Women,

### INTRODUCTION

Coronary heart disease (CHD) was thought to be a disease of men. However, recent evidence highlights that it is the most common cause of death in women. <sup>(1)</sup> Almost one in three women is killed by CHD. <sup>(2)</sup> Women are four-to-eight times more likely to die of CHD than of any other

disease, yet women are under-diagnosed and under-treated for their diseases and associated risk factors. <sup>(3)</sup>

Women tend to have very poor prognosis when they have CHD and this is due to the increased age at the time of initial diagnosis and a greater frequency of risk factors and health conditions than men. <sup>(4)</sup> In

order to prevent progression of CHD, modification of risk factors should be included in the plan of care. Women need to know what risk factors for CHD they have before modifications in lifestyle can occur. The major risk factors for CHD in women are cigarette smoking, hypertension, dyslipidemia, diabetes mellitus, obesity, sedentary lifestyle, and eating foods high in fat and low in fibre. <sup>(5,6)</sup> Without an understanding of these risk factors, women are poorly prepared to carry out preventive self-care actions. Saudis' consumption of foods rich in animal protein, fat and sodium has dramatically increased. <sup>(7,8)</sup> These changes have been accompanied by the emergence of non-communicable diseases such as diabetes and CHD. Studies also showed increase in CHD risk factors in KSA. <sup>(9-13)</sup> The specific objective of this study was to determine knowledge of CHD risk factors and preventive measures among women attending primary health care centers in Alkhobar city, eastern Saudi Arabia.

## MATERIALS AND METHODS

This was a cross-sectional study conducted at Al-Khobar city primary health care centers (PHCCs) in the Eastern Province of Saudi Arabia. The study population consisted of all Saudi females, ages 18 years and above attending the PHCCs during the study period. The sample size was 735 females calculated using the following equation: <sup>(14)</sup>

$$N = \frac{(Z_{(1-\alpha/2)} + Z_{(1-\beta)})^2 P(1-P)}{d^2}$$

Where; p= the proportion of women having good knowledge about CHD. According to literature review, <sup>(9-12)</sup> it has been considered to be 0.3, (d) = 0.07 while type I error ( $\alpha$ ) was 0.05 and type II error ( $\beta$ ) was 0.2.

Women were selected from each PHCC in proportion to the number of

women registered at each center. A two-stage random sampling technique was used. In the first stage, five out of nine PHCCs were selected using simple random sampling technique. In the second stage the sample of women for each center was selected using systematic random sampling. The sample was calculated as follows: from Ibn-Alnafees PHCC 289 women, Bayoniah PHCC 162 women, Rakah PHCC 119 women, South Khobar PHCC 95 women and Petromin PHCC 70 women.

Data was collected using an interviewer-administered questionnaire validated by five consultants from the Department of Family and Community Medicine at University of Dammam. A total of 41 items questionnaire was used. The variables included were: socio-demographic characteristics, women's knowledge of CHD, and CHD preventive measures.

The study was approved by the research committee at the Department of Family and Community Medicine, University of Dammam. Permission to conduct the study was granted by the Director of Alkhobar PHCCs. All women were interviewed by the first author after taking their consent. Objectives of the study were explained and questions were filled without names. Patients were managed for medical problems they presented with. Health education and pamphlets about CHD prevention were given to all the women interviewed.

A score of 1 was given for each risk factor mentioned. The knowledge score is the sum of these points amounted to be >5. Women who score 3 or more (50% of the 6 major risk factors) were considered to have good knowledge. Likewise, women were also questioned about their knowledge of the most important preventive measures for CHD. These were smoking cessation, low fat diet, controlling diabetes and hypertension, physical exercise, weight

control and stress avoidance. Also here women who score 3 and more were considered to have good knowledge. Both scores for knowledge of CHD risk factors and preventive measures were summed as a total score for the purpose of analysis. Women who score more than 50% of the maximum total score were considered to have good knowledge about CHD.

A pilot study was conducted in another PHC (excluded from the study). The questions were structured and conducted in Arabic language. The Reliability coefficient using split-half method was = 0.68. Data were coded and then entered into the Statistical Package for Social Sciences (SPSS-PC) version 11 software. One-way ANOVA was used for total score of knowledge about CHD and other independent variables. Student's t-test was used to assess the relation between the total knowledge score about CHD and the presence of major risk factors. Multiple linear regression model was used to predict difference of total knowledge score from some predictors. A p-value of < 0.05 was considered as statistically significant.

## RESULTS

Out of 735 women recruited, 700 agreed to be interviewed; giving a response rate of 95.2%. The mean age was 34.0±10.3 years, with a range between 18 to 70 years. As shown in Table 1, 393 women (56.2%) were of age less than 35 years, 564 (80.6%) were married, 158 (22.6%) were illiterate, 89 (12.7%) were having university degree, 295 (47.7%) have monthly income less than 5000 SR and 168 (24.0%) reported to have history of CHD among their first degree relatives.

When women were asked to identify major causes of CHD, high consumption of fatty food was mentioned by 254 (36.3%), while 249 (35.6%) mentioned smoking, 240 (34.3%) mentioned lack of physical

exercise, and 215 (30.7%) mentioned obesity (Table 2). Hypertension and diabetes mellitus were mentioned by less than 30.0% of the women.

Table 1. Demographic characteristics of the study population (n=700)

Demographic characteristics	Number	%
Age (years):		
< 35	393	56.1
35 – 44	186	26.6
45 – 54	94	13.4
55 – 64	18	2.6
≥ 65	9	1.3
Marital status:		
Single	88	12.6
Married	564	80.6
Divorced	20	2.9
Widowed	28	4.0
Education:		
Illiterate	158	22.6
Read and write	67	9.6
Primary	87	12.4
Intermediate	122	17.4
High school	177	25.3
University and above	89	12.7
Occupation*:		
Housewife	535	76.5
Student	46	6.6
Governmental employee	46	6.6
Health team	72	10.3
Income/month(in Saudi Riyals)*:		
< 5000	295	47.7
5000-9999.9	255	41.2
≥ 10000	69	11.1
Family history**:		
Coronary heart disease	168	24.0
Hypertension	392	56.0
Diabetes	389	55.6
Sudden death	74	10.6
Stroke	38	5.4
Others	43	6.1

\* Missing values. \*\* Numbers are not totally exclusive

Table 2. Knowledge of CHD risk factors and preventive measures. (N=700)

Knowledge of CHD	No.*	%
Risk factors:		
High consumption of fatty food	254	36.3
Smoking	249	35.6
Lack of physical exercise	240	34.3
Obesity	215	30.7
Hypertension	202	28.9
Diabetes mellitus	152	21.7
Stressful life	96	13.7
Others	9	1.3
Don't know	92	13.2
Preventive measures:		
Low fat diet	404	57.7
Smoking cessation	343	49.1
Physical exercise	241	34.5
Hypertension treatment	135	19.4
Control of diabetes mellitus	107	15.3
Others	144	20.6
Don't know	95	13.6

\* Numbers are not totally exclusive

Table 3. Total Score Knowledge of CHD risk factors and preventive measures in relation to women's socio-demographic data

Socio-demographic data		Total score	p-value
		Mean±1 S.D	
Income in S.R.:			
	< 5000	3.3±2.5	<0.001
	5000-9999.9	4.5±2.9	
	≥ 10000	6.0±2.9	
Education:			
	Illiterate + read& write	2.8±2.4	<0.001*
	1ry +2ry +high school	4.2±2.7	
	University and above	5.8±3.2	
Marital status:			
	Married	4.0±2.9	N.S**
	Single	3.6±2.8	
	Divorced	3.7±2.5	
	Widowed	4.2±3.1	
Occupation:			
	Housewife	3.6±2.5	<0.001*
	Student	3.4±2.5	
	Governmental employee	5.9±3.1	
	Health team	4.2±3.1	
Age (years):			
	<35	3.9±2.9	N.S**
	35-44	4.1±2.9	
	45-54	4.1±2.6	
	55-64	3.9±2.6	
	≥65	4.5±4.0	

\*KRUSKAL-WALLIS test

\*\* N.S; not significant.

When women were asked to identify major preventive measures for CHD, 404 (57.5%) mentioned consumption of low-fat diet, 343 (49.1%) mentioned smoking cessation and 241 (34.5%) mentioned physical exercise. Control of hypertension and diabetes were mentioned by less than 25% of women. Out of all women, 92 (13.2%) had no idea about any cause of CHD, while 95 (13.6%) had no idea about any preventive measure.

Table 3 reveals the relation between some of the socio-demographic characteristics of the respondents and their total CHD knowledge score (score of knowledge about risk factors + score of knowledge about preventive measures for each respondent). The variables studied here

included income, educational level, marital status, occupation, and age. A statistically significant association was found between total knowledge score and income, educational level and occupation ( $p < 0.001$ ).

Eight independent variables were entered into the multiple linear regression model. These were income, education level, occupation, receiving health education, self-reported history of diabetes, CHD, dyslipidemia, and obesity. The following independent variables were found to be predicting women's knowledge of CHD: income, occupation, education, history of CHD, history of obesity, and receiving health education about CHD ( $p < 0.05$ ) as shown in Table 4.

Table 4. Regression model to predict total knowledge score from some independent variables.

Predictors	Regression Coefficient $\beta$	Standarderror of $\beta$	t-test	p-value
Constant	-0.31	0.35	-0.89	-
Income	0.83	0.15	5.36	<0.001
Occupation	0.60	0.10	5.53	<0.001
Education	0.93	0.17	5.33	<0.001
History of CHD	1.298	0.60	2.13	0.033
Obesity	0.763	0.21	3.53	<0.001
Received Health education	0.978	0.25	3.85	<0.001

## DISCUSSION

Most of the studies on coronary artery disease have been conducted among men, with women making up a small part of the total number of subjects. <sup>(15,16)</sup> This study was conducted among women and at primary health care level, which was similar to some other studies. <sup>(17-20)</sup> Nearly half of the sample was of young age group (pre-menopausal). The study by Alghabrah <sup>(21)</sup> showed that CHD risk factors had been seen at younger age groups. In USA, it was found that about 9000 women younger than 45 years have a myocardial infarction (MI) each year. <sup>(18)</sup> Half of the respondents were of lowest group of income (less than 5000 S.R). This group of low income people had been shown to be more likely to be deprived of health care. <sup>(22)</sup>

Poor educational level was seen in one-third of the women in this study. This was similar to other studies which showed that knowledge about CHD risk factors was poor in men and women of low educational level. <sup>(23-25)</sup>

One-third of the women in this study were having family history of CHD and sudden death at young age among their first degree relatives. This figure is quite high compared to a study done to explore the probability of coronary artery disease among patients attending primary health care centers in Southwest Saudi Arabia by Al-Humaidi et al, <sup>(13)</sup> who found that 6% have positive family history of heart disease.

Comparison of women's knowledge of major risk factors in this study with that in Mosca et al study, <sup>(18)</sup> Canadian study, <sup>(20)</sup> Heather study, <sup>(25)</sup> Aljoudi et al study, <sup>(26)</sup> and Al-Shafae et al study, <sup>(27)</sup> showed that less women knew about the behaviour-related risk factors for CHD like obesity and lack of physical exercise. Lack of physical exercise was mentioned by only 34.3% while it was mentioned by 32.0% in Aljoudi et al study, 40.0% in Mosca et al study and

41.0% in the Canadian study. Prevention of obesity and practice of physical exercise are known to have good effects on the control of other risk factors (hypertension, diabetes mellitus, and hyperlipidemia). <sup>(28)</sup>

More women mentioned hypertension (28.9%) and diabetes mellitus (21.7%) in this study. This could be partially attributed to the effect of a major local campaign for diabetes mellitus and hypertension screening among Saudi population in Eastern Province at that time. <sup>(29)</sup> The finding that around 13.0% of participants couldn't name any CHD risk factor or preventive measure is almost similar to Rankin and Bhopal survey. <sup>(30)</sup>

Around 30% of the women surveyed were able to identify at least three and more of the major CHD risk factors and preventive measures. This result is low compared to Heather study, <sup>(25)</sup> where half of the surveyed women were able to recognise three and more of the major risk factors. The poor knowledge among the participants in this study points to a major defect in the health care system that lacks the prevention approach in dealing with CHD.

Table 4 showed some of the factors that significantly predict total knowledge score of women about CHD. This finding is in close agreement with several studies. <sup>(17,19,20,23,26,30-31)</sup> In Andersson study, knowledge about CHD risk factors was significantly poorer in men than in women. Low education and low socio-economic status were other factors related to poor knowledge of CHD risk factors. <sup>(31)</sup> In the Canadian study when other individual factors were controlled for, the strongest and most consistent association was between education and knowing CVD risk factors. <sup>(20)</sup>

This study revealed that: (1) women had poor knowledge about CHD major risk factors and the most important preventive measures; (2) there is a significant correlation between women's knowledge



about CHD risk factors and preventive measures and some socio-economic variables.

## CONCLUSION

It is concluded that current health education and promotion programs are inadequate. More evidence-based locally designed and socially acceptable health education and promotion programs should be directed to women.

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