



## AWARENESS AND IDENTIFICATION OF RISK FOR CARDIOVASCULAR DISEASE AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS

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### ABSTRACT

Cardiovascular disease accounts for nearly half of the non communicable disease and diabetes mellitus is one of the major risk factor for developing cardiovascular disease. The present study dealt with assessing the awareness of CVD, and to identify the risk of getting CHD within 10 years among patients with type 2 DM attending medical OPD of a selected tertiary care hospital in Thiruvananthapuram district. Study was conducted using descriptive survey, among 200 patients with type 2 diabetes mellitus attending the medical outpatient department, AHRI, with a structured interview schedule. Awareness of CVD was assessed using HDFQ and risk for getting CHD within 10 years was assessed using UKPDS risk engine. The study finding revealed that majority of the subjects 124 (62%) have poor awareness regarding CVD. 75 (37.5%) have moderate risk for getting CHD within 10 years, 71 (35.5%) with mild risk and 54 (27%) have severe risk of getting CHD. Majority of the subjects 104 (52%) have mild risk of getting fatal CHD, 73 (36.5%) have moderate risk and 23 (11.5%) with severe risk. Using Chi square test, it was found that there is significant association between awareness of CVD and age, sex, occupation, education, family income and physical activity. Also significant association was observed between risk of CHD and age, sex, occupation, substance abuse and previous knowledge regarding CVD.

**KEYWORDS** : Awareness; risk for CHD; Type 2 DM.

### INTRODUCTION

Cardiovascular disease is the leading cause of death in most countries, particularly in economically developed countries. The burden from cardiovascular diseases has been increasing in developing countries also. According to current projections the overall cardio vascular disease rates will continue to increase in the 21st century and will be the leading cause of death in both developed and developing nations. The large global burden of CVD is occurring despite the availability of proven primary and secondary preventive strategies that have not been effectively disseminated. Coronary heart disease is common among people with diabetes mellitus. Adult with diabetes mellitus have 2-4 fold increased risk of heart disease compared to those not having diabetes. CVD in diabetic patients is more severe, complex and result in higher complications than in patients without diabetes.<sup>1</sup>

### REVIEW OF LITERATURE

The impact of cardiovascular disease was compared in non-diabetics and diabetics in the Framingham cohort consisting of 5,209 men and women between the ages of 30 and 62 from the town of Framingham, Massachusetts. In the first 20 years of the study about 6% of the women and 8% of the men were diagnosed as diabetics. The incidence of cardiovascular disease among diabetic men was twice that among non-diabetic men. Among diabetic women the incidence of cardiovascular disease was three times than among non-diabetic women.<sup>2</sup>

The prevalence of coronary artery calcium among diabetic individuals without known coronary artery disease, 30,904 asymptomatic individuals were assessed in the US general population, compared with non diabetic individuals (n = 29,829), those with diabetes (n = 1,075) had higher median coronary artery calcium. Overall, the likelihood of having a coronary artery calcium score was 70% greater for diabetic individuals than for their non diabetic counterparts.<sup>3</sup>

In the Chennai urban population study, a cross sectional field survey, done among 1399 peoples of two resident areas of Chennai reveals that the prevalence of CAD among diabetic subjects was 21.4% (known diabetes, 25.3%, and newly diagnosed diabetes, 13.1%). Prevalence of known MI was three times higher in diabetic subjects. However, this study showed that the risk for CAD increased even at the stage of Impaired Glucose Tolerance itself.<sup>4</sup>

### Objectives of the study

1. Assess the awareness of risk for cardiovascular disease (CVD) among patients with diabetes mellitus.
2. Estimate the risk for developing coronary heart disease (CHD) among patients with type 2 diabetes mellitus.
3. Determine the association between awareness of cardiovascular disease among patients with type 2 DM and selected socio personal variables.
4. Determine the association between risk of CHD among patients with type 2 DM and socio personal variables.

### Research Methodology

**Research approach** : Quantitative

**Research design** : Descriptive survey

### Setting of the study

The study was conducted in the Medical Outpatient Department, Ananthapuri Hospitals And Research Institute, Chakai, Thiruvananthapuram.

### Population

Type 2 diabetes mellitus patients.

### Sample

Patients with type 2 diabetes mellitus visiting medical OPD of Ananthapuri Hospitals and Research Institute, Chakai, Thiruvananthapuram

### Sampling technique

Purposive sampling was adopted for this study.

### Inclusion criteria

1. Patients aged 30 years and above, and on treatment for diabetes for atleast 3 months.

### Exclusion criteria

1. Patients who have gestational diabetes.
2. Patients already diagnosed with cardiovascular disease
3. Mentally challenged patients.

### Tool/Instruments

The following tools were used to assess the awareness and identification of risk of cardiovascular disease among patients with

type 2 diabetes mellitus.

1. Structured interview schedule to assess the socio personal data and data for UKPDS risk engine.
2. HDFQ to assess the awareness regarding cardiovascular disease
3. UKPDS (United Kingdom prospective diabetes study) risk engine to assess the risk for getting CHD within 10 years.

**Instrument:**

1. Calibrated sphygmomanometer to assess the blood pressure of the patients with diabetes mellitus.

**Content validity**

Content validity was confirmed by five experts, two from the field of Medical-Surgical Nursing and two cardiologists and one general physician.

**Reliability of the tool and instrument**

Tool 1: The reliability of the tool was estimated using split-half method and the tool was found to be reliable (r = 0.98).

2. Tool 2: HDFQ shows good reliability with (r = 0.77).
3. Tool 3: UKPDS risk engine, all variables included in the model were statistically significant p < 0.001 in likelihood ratio testing.
4. Instrument: The reliability of the sphygmomanometer was ascertained by the calibration done at Biomedical Engineering Department of Ananthapuri Hospitals and Research Institute, Thiruvananthapuram.

**Data collection process**

Data collection was started after getting permission from the Institutional Review Board of Ananthapuri Hospitals and Research Institute. Informed consent was obtained from the participants and the data collection was done over 8 weeks among 200 patients who met the inclusion criteria. Samples were selected by purposive sampling technique. A written permission was obtained from UKPDS, UK authorities to carry out this academic noncommercial research using UKPDS risk engine. The period of data collection was from 12-12-2015 to 15-04-2016.

The data was collected using a structured interview schedule, after they enroll their name in the OPD. 25-30 minutes was taken for the administration of the test and for collecting the relevant data from the patients file. Blood pressure was assessed using a calibrated sphygmomanometer.

**RESULTS**

**Table 1 Distribution of subjects according to awareness of risk for CVD among patients with type 2 DM. (n = 200)**

Awareness	f	%
Poor	124	62.0
Good	76	38.0

As detailed in table 1 majority of the subjects 124 (62%) were having poor knowledge and 76 (38%) subjects were having good knowledge.

**Table 2 Distribution of the subjects according to risk for developing CHD within 10 years. (n=200)**

Risk	f	%
0 – 15 (mild)	71	35.5
16 – 30 (moderate)	75	37.5
> 30 (severe)	54	27.0

As detailed in table 2 majority of the subjects 75 (37.5%) were having moderate risk for getting CHD, 71 (35.5%) subjects with mild risk and 54 (27%) were having severe risk for developing CHD within 10 years.

**Table 3 Distribution of subject according to risk for developing fatal CHD within 10 years. (n=200)**

Risk of fatal CHD	f	Percent
0 – 15 (mild)	104	52.0
16 – 30 (moderate)	73	36.5
> 30 (severe)	23	11.5

Above table shows that majority of the subjects 104 (52%) were having mild risk for developing fatal CHD within 10 years, 73 (36.5%) were having moderate risk and 23 (11.5%) with severe risk.

**Table 4 Association between risk for getting CHD within 10 years among patients with type 2 DM and age. (n=200)**

Age	Mild		Moderate		Severe		X <sup>2</sup>	p
	f	(%)	f	(%)	f	(%)		
31-50 years	39	(70.9)	12	(21.8)	4	(7.3)	47.88**	0.001
51-70 years	31	(24.6)	50	(39.6)	45	(35.7)		
71-90 years	1	(5.3)	7	(36.8)	11	(57.89)		

\*\*:- Significant at 0.01 level

As per the above table, chi square value computed shows (chi square = 47.88, p = 0.001) that there is statistically significant association between risk for getting CHD within 10 years among patients with type 2 DM and age.

**Table 5 Association between risk for getting CHD within 10 years among patients with type 2 DM and sex. (n=200)**

Sex	Mild		Moderate		Severe		X <sup>2</sup>	p
	f	(%)	f	(%)	f	(%)		
Male	27	(25.47)	33	(31.13)	46	(43.3)	20.62*	0.001
Female	31	(24.6)	36	(38.29)	14	(14.89)		

\*\*:- Significant at 0.01 level

As depicted in table 5, chi square value computed shows (chi square = 20.62, p = 0.001) that there is statistically significant association between risk for getting CHD within 10 years among patients with type 2 DM and sex.

**Table 6 Association between risk for getting CHD within 10 years among patients with type 2 DM and substance abuse. (n=200)**

Substance Abuse	Mild		Moderate		Severe		X <sup>2</sup>	p
	f	(%)	f	(%)	f	(%)		
Alcoholism	1	(9.09)	7	(63.6)	3	(27.2)	16.49	0.011
Cigarette smoking	11	(25.58)	12	(27.9)	20	(46.5)		
Tobacco	0	(0)	2	(100)	0	(0)		
None	59	(40.9)	48	(33.33)	37	(25.69)		
						5*		

\*:- Significant at 0.05 level

As depicted in table 6, chi square value computed shows (chi square = 16.495, p = 0.011) that there is statistically significant association between risk for getting CHD within 10 years among patients with type 2 DM and substance abuse.

**Discussion**

The present study finding revealed that majority of the subjects 124 (62%) were having poor awareness regarding CVD and the remaining 76 (38%) have good awareness regarding CVD. Majority of subjects 75 (37.5%) were having moderate risk for getting CHD, 71 (35.5%) with mild risk and 54 (27%) were having severe risk. Different studies agree with the findings that majority of the patients with type 2 DM had poor awareness about risks for CVD.<sup>5,6</sup>

The study finding is comparable with different studies conducted in India, Lahore, Saudi which reveals that majority of the subjects were having a moderate risk for developing CHD within 10 years.<sup>7,8,9</sup>

### Conclusion

Cardiovascular disease, particularly coronary artery disease, is a major cause of morbidity and mortality among patients with diabetes mellitus. Compared to non diabetic patients, diabetic patients are more likely to have coronary artery disease. Literature reviews also showed that patients with type 2 DM are at 2-4 fold increased risk for developing CHD. As a result of this, healthcare system should deliver quality primary and secondary prevention of diabetes mellitus with the goal to reduce its prevalence as well as lessening the progression of its micro vascular and macro vascular complications. The present study is intended to assess the awareness and risk of cardiovascular disease among patients with type 2 DM, with an assumption of awareness on risk for cardiovascular disease may be low among patients with type 2 diabetes mellitus and the risk for coronary heart disease may be high among patients with type 2 diabetes mellitus. The study findings also revealed that majority of the patients with type 2 DM were having poor awareness regarding risk for CVD and majority of subjects were having moderate risk for getting CHD. Hence the results are agreeable with assumptions of the study.

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