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Knowledge about risk factors, symptoms and diet pertaining to cardiac disease among rural population of Tamil Nadu

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ABSTRACT

The prevalence of Cardiovascular Vascular Disease is increasing rapidly and has become a leading cause of mortality and morbidity in both developing and developed countries. Demographic transitions, adoption of unhealthy lifestyles and diet, sedentary occupations and even ignorance has contributed to this epidemic. However, there are very few existing studies determining the awareness of CVD and its risk factors among general population. We studied 640 patients from one subset of rural Chennai to determine the essential knowledge on various aspects of coronary artery disease. Most of our patients were aware that chest pain, sweating, palpitation, increased consumption of fatty and oily food, diabetes mellitus, hypertension and smoking were associated with heart disease. What was surprising was that majority did not know that dyspnea, edema and oliguria could occur in Cardiovascular Vascular Disease. Many did not know that avoidance of sedentary lifestyle was heart healthy and almost 50% of the study population were unaware that consumption of increased amount of green leafy vegetables and could prevent heart disease. Half of the study population did not recognise that family history of premature cardiovascular disease could predispose to the same in the offspring. Methods to increase this awareness and follow up programs to monitor whether they are implemented could go a long way to reduce the prevalence of the disease.



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INTRODUCTION

Prevalence of Cardiovascular Vascular Disease (CVD) in the Indian subcontinent is presently one of

the highest and still continues to increase. Several studies have estimated that by 2030, more than 23 million people would die of cardiovascular disease and its complications (Shafiq, 2017).

CVD in the Indian scenario is characterised by high prevalence, early onset, and high mortality irrespective of the social strata or the degree of urbanisation and development and implementation of strategies for its early detection, treatment and prevention is the need of the day (Prabhakaran et al., 2016).

The Prevalence of Ischemic heart disease (IHD) increased to 14% in 2013 from 2% in 1960 in Urban subset of India and in rural India from 1.7% in 1970 to 7.4% in 2013 (Prabhakaran et al., 2016).

High blood pressure, high blood glucose level, dyslipidaemia, smoking, obesity and physical inactivity

are some of the conventional risk factors for IHD. A risk factor is generally defined as a characteristic of an individual that is associated with a subsequent development of disease.

Knowledge, Attitudes, and Behaviour in the General Population in Italy in the study on Cardiovascular Diseases and Women reported that although 96% of the population had vaguely heard about CVD risk factors particularly smoking and dyslipidaemia, only 26.5% were capable of correctly identifying the main CVDs risk factors (Tedesco *et al.*, 2015).

A study among individuals who had suffered a first heart attack in Karachi, Pakistan, reported a rather obvious lack of knowledge of IHD risk factors. Only 20% of the 42% who had a reasonably good knowledge about CVD were able to identify the cardiac risk factors (Khan *et al.*, 2006).

Abdelmoneim Awad and Hala Al-Nafisi, reported from their study, that knowledge of the Kuwait public about CVD was low, two – fifths were unaware of heart attack symptoms and 60% had no knowledge of CVD risk factors (Awad and Al-Nafisi, 2014).

The Canadian population were more aware about cardiovascular risk factors such as fat in food (60% awareness), 52% knew that smoking was a culprit and 41% about sedentary life styles and lack of exercise, but only 32%, 27% and 22% associated over weight, cholesterol and high blood pressure respectively as IHD risk factors (Potvin *et al.*, 2000).

Awareness of CAD risk factors varying among different populations groups. In the United States of America, the African Americans had a lesser knowledge about CAD risk factors than whites and in UK where South Asian families had a lower awareness compared to the white population have been reported (Ford and Jones, 1991; Lip *et al.*, 1996). It is reasonable to infer that these would have reduced over time by literacy and education. This is seen even now in Indian rural populations and more often in traditional joint family systems with orthodox beliefs than in nuclear family households.

Education and awareness programmes to increase the knowledge of the population about IHD would help decrease its prevalence especially in areas where ignorance was the cause of the increase in the global burden of the disease (Lynch *et al.*, 2006).

MATERIALS AND METHODS

The study was conducted in Saveetha Medical College and hospital over a period of 3 months from November 2019 – January 2020. A total of 640 attendants of patients attending the various departments in our hospital were included in the study.

The age ranged from 18yrs – 60yrs with mean age of 47yrs and 76% were male. Majority of them (86%) had passed 10th standard and 99% were working as daily wage earners.

A study population of more than 620 was deemed to be statistically adequate based on data available as from previous studies in India. A structured identical questionnaire in both English and Tamil was made and distributed among patient attendants who were 18years of age or more in the various outpatient departments of our Hospital. The name of the attendant, age, educational status, occupation and phone number was noted in the questionnaire. Total of 640 attendants answered the questionnaire and the data was analysed.

The Structured questionnaire was divided into 3 sections viz A, B, C. Section A consisted of questions pertaining to IHD risk factors, Section B consisted question pertaining to symptoms & Section C consisted of questions pertaining to diet, with yes/no, do not know choices. The study was approved by Hospital Ethics Committee. An informed consent form was filled by each attendant, before filling the questionnaire. Attendants of Patients with residence not designated as rural as per Government notification were excluded from the study.

Several years of national and international protocols and reports to educate people to adopt a cardiac friendly lifestyle have not been completely effective and literacy and education have been identified as mandatory to improve awareness to implement heart healthy life styles.

RESULTS AND DISCUSSION

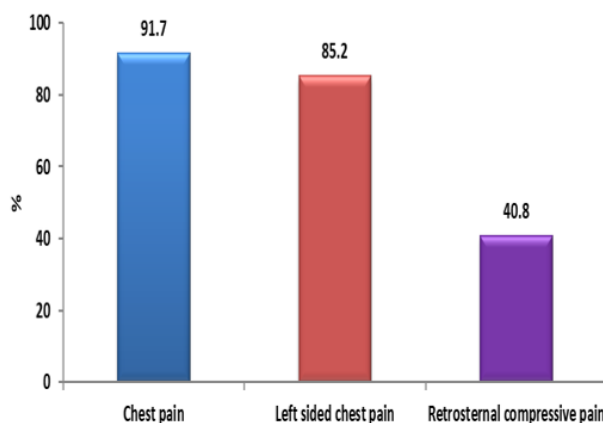


Figure 1: Awareness of chest pain as a CVD symptom

Our study cohort consisted of 640 cases from rural Chennai, ages ranging from 18 years to 60yrs of which 76% were male. Around 587 (91.7%) were aware that chest pain was an important symptom of

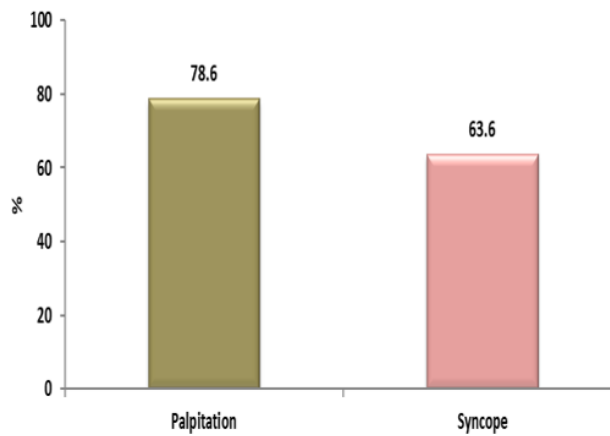


Figure 2: Awareness of Palpitation and syncope as CVD symptom

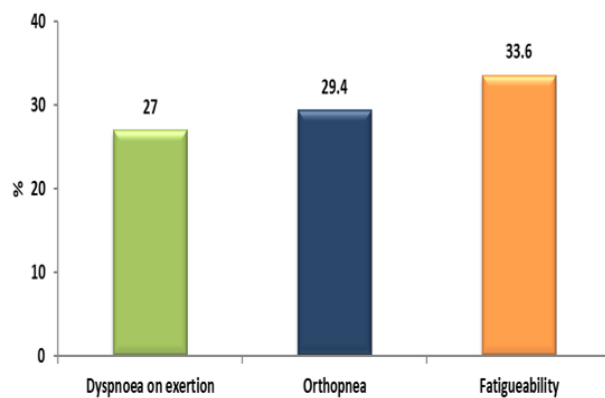


Figure 3: Awareness of Dyspnea and fatigue as a CVD symptom

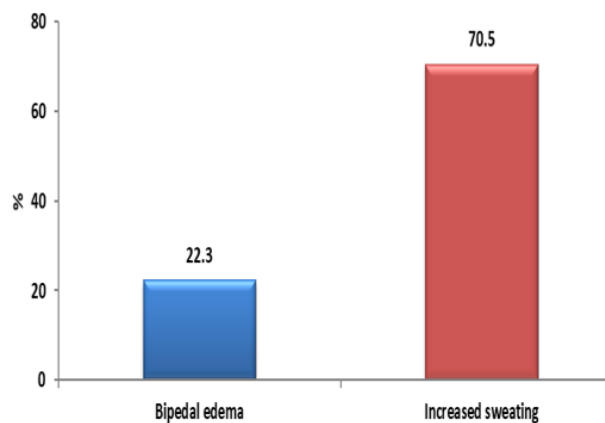


Figure 4: Awareness of Bipedal edema and increased sweating as a CVD symptom

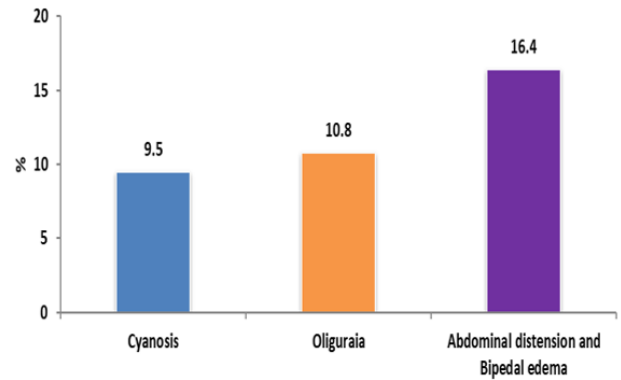


Figure 5: Awareness of cyanosis, oliguria and abdominal distension with bipedal edema as a symptom of CVD

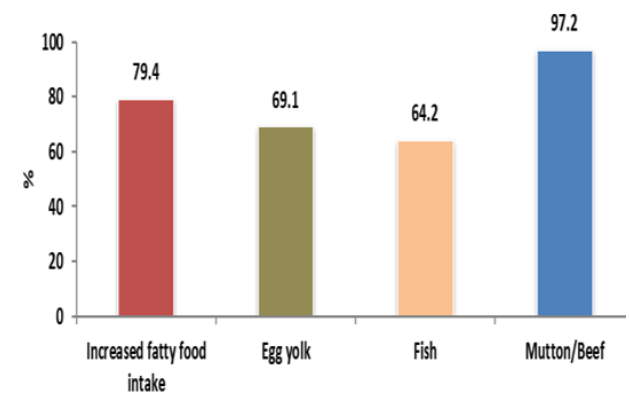


Figure 6: Awareness that fatty food, egg yolk, mutton /beef increase CVD risk

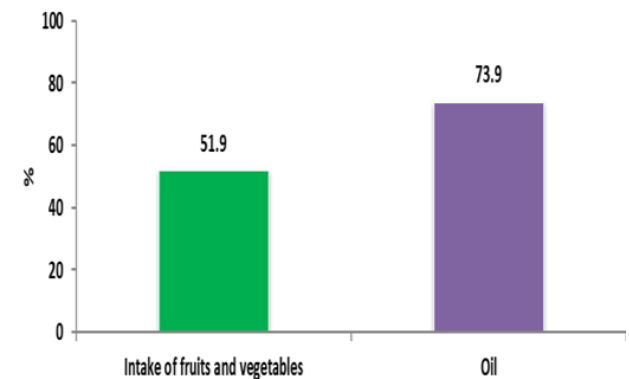


Figure 7: Awareness that Intake green leafy vegetables and fruits decreases CVD risk

heart disease, whereas 53 (8.3%) did not know or did not think so. 545 (85.2%) thought that left sided chest pain was a symptom of IHD. Almost equal number viz 261(40.8%) recognised that retrosternal chest pain was a symptom of IHD in contrast to 379(59.2%) who said it was not important (Figure 1).

503(78.6%) knew that palpitation could occur with cardiac disease, 137(21.4%) said it was not a car-

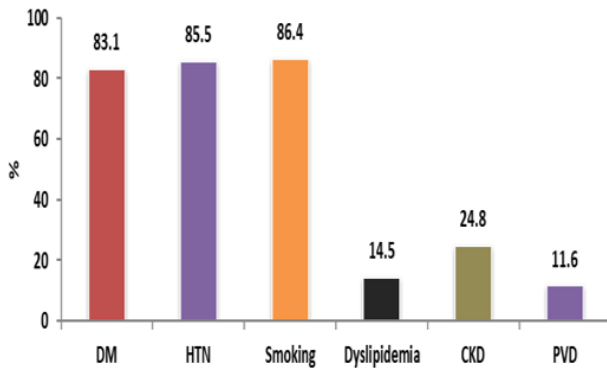


Figure 8: Awareness that Diabetes Mellitus(DM), Hypertension(HTN), Smoking, Dyslipidemia, Chronic Kidney Disease(CKD), Peripheral vascular Disease (PVD) are CVD risk factors

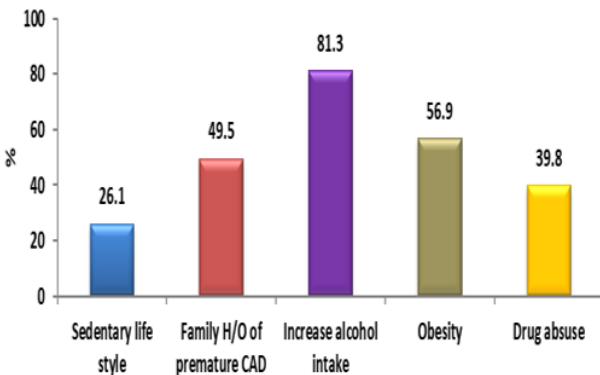


Figure 9: Awareness that Sedentary lifestyle, family history of premature CAD, Obesity as CAD risk factors

Table 1: Choice of Oil consumed by study population

Type of oil	Frequency	Percent
Sunflower oil	179	28%
Ground nut oil	119	18.6%
Gingely oil	96	15%
Castor oil	89	13.9
Coconut oil	87	13.6
Olive oil	33	5.2%
Others	13	2%
NIL	4	0.6%
Palm oil	3	0.5%
More than 1 oil	17	2.7%
Total	640	

diac symptom or had not thought about it. That syncope was a symptom of cardiac disease was known to 407(63.6%), and 233(36.4%) were unaware (Figure 2).

With dyspnea as a symptom only 173(27%) felt it was related to cardiac disease, whereas the majority, 467(73%) either said it was no related or they did not know. Only 188(29.4%) recognised orthopnea as a symptom of cardiac disease, while 452 (70.6%) did not think or did not know it occurred in cardiac disease (Figure 3).

215 attendants (33.6%) acknowledged fatiguability as a being related to cardiac disease while the majority, 425(66.4%) did not think so.

Bipedal edema, as occurring in heart disease was recognised by only 143(22.3%) while the majority, 497(77.7%) were unaware.

451(70.5%) in contrast to 189(29.5%) knew that increased sweating was associated with cardiac disease (Figure 4).

Only a few, 61(9.5%) were aware that cyanosis occurred with cardiac disease and the majority 579(99.5%) were unaware of the relationship.

Sixty-nine (10.8%) recognized that oliguria could occur in heart disease while 571(89.2%) were not aware of this.

Bipedal edema and abdominal distension as a symptom of cardiac disease was recognized by only 105 (16.4%) whereas 535(83.6 %) did not know that it was related to cardiac disease (Figure 5).

The knowledge that increased consumption of fatty food may lead to cardiac disease was present in 508(79.4%). 442(69.1%) knew that egg yolk had a high cholesterol level and may cause atherosclerosis and IHD.

That consumption of fresh water fish was more cardioprotective was known to 411(64.2%) while 229 (35.8%) were ignorant of this fact. 622(97.2%), in contrast to 18(2.8%) were aware that eating red meat like mutton and beef was not cardiac friendly (Figure 6), Awareness that consumption of fish decreases CVD risk.

That intake of good portions of green leafy vegetables and fruits were cardioprotective was known to 332(51.9%), whereas 308(48.1%) were ignorant of the fact.

There was big difference viz 473(73.9%) vs 167(26.1%) who were aware and unaware respectively that less oil consumed was better for the heart (Figure 7), Awareness that increased consumption of oil increases CVD risk.

The commonest oil used was sunflower oil (28%) followed by groundnut oil (18.6%), gingely oil (15%), castor oil (13.9%), coconut oil (13.6%), olive oil (5.2%), palm oil (0.5%) and 2% used other oils. 0.6% did not know which oil they used and 2.7% used more than one kind of oil (Table 1).

532 (83.1%) acknowledged that diabetes mellitus was associated with IHD, whereas 108 (16.9%) were unaware of that. That Hypertension is an important risk factor of IHD was known to 547 (85.5%), while 93 (14.5%) were unaware. 553 (86.4%) recognised smoking as an important IHD risk factor, whereas only 87 (14.5%) knew that dyslipidaemia could lead to the disease. 481 (75.1%) subjects were unaware that there was an increased incidence of IHD in chronic kidney disease and 566 (88.4%) were unaware that peripheral vascular disease was commonly associated with coronary artery disease (Figure 8).

That obesity could lead to heart attacks was recognised by 57%, in contrast to 43% who were unaware. 473 (73.9%) participants did not have an idea that sedentary life style could lead to IHD and 323 (50.4%) did not know that family of premature CAD could lead to the possibility of the disease in the offspring. Surprisingly, 520 (81.3%) thought that increased alcohol intake and 39.8% related increased drug intake to heart attacks (Figure 9).

A study on the Awareness of ischemic heart disease (IHD) and risk factors among patients with in Kurnool Government general hospital, Andhra Pradesh conducted by Prasuna (2013) reported that the awareness that smoking, hypertension, inadequate exercise, stress in family, use of ground nut oil in cooking, Type A personality could lead to CAD was high. Most of the patients (45%) had average knowledge, (35%) had below average knowledge and (20%) of the participants had above average level of knowledge of risk factors of Ischemic heart disease (Prasuna, 2013).

91% Of the subjects in our study were aware that chest pain was an important symptom of CAD (Figure 1). Similarly, 70.5%, 76.6% and 63.6% had the knowledge that chest pain associated with sweating, palpitation and syncope respectively could occur in CVD (Figure 2). What was surprising was that majority did not know that dyspnea, edema and oliguria could also occur in CVD (Figure 3).

Chinju George and G. Andhuvan reported from their population-based study on Awareness of CVD Risk Factors that 48% were aware and 52% were unaware of CV risk factors. Almost all the participants who were aware considered over weight as the most important risk factor, followed by high

cholesterol level (98%), high blood pressure (94%) and Smoking (92%). They also recognised that regular exercise could help reduce the occurrence of the heart disease. Most of the people were ignorant that age and family history were also important non modifiable risk factors of CVD (George, 2014).

That increased consumption of fatty and oily food could lead to CVD was known to 79.4% of subjects in our study and 97.2% also recognised the consumption of red meat and CVD (Figure 6). So also, was eating plenty of fresh water fish and the usage of less oil could protect from CVD was known to 64.2%, 51.9% and 73.9% respectively (Figure 7).

The study by the Food and Nutrition Sciences headed by Patrick Mullie et al published online on the association between Cardiovascular Disease Risk Factor Knowledge and Lifestyle in Brussels, Belgium where in an open-ended questionnaire devoid of definite answers to assess subject's knowledge on CV risk factors was done. Physical inactivity, smoking and high fat diet were the 3 most recognised factors. On the other hand, the least recognised risk factors were obesity, high salt diet and a diet devoid of fruits and vegetables. The higher the socioeconomic status and higher the education, greater was their knowledge on CAD risk factors (Mullie and Clarys, 2011).

In our study, 83.1% were aware that diabetes mellitus could cause CVD, 85.5% recognised hypertension as leading to the same and 86.4% knew that smoking was an important cardiovascular culprit. 88.4% were unaware that peripheral vascular disease could be commonly associated with IHD. 75.1% were unaware that chronic kidney disease could be associated with CAD (Figure 8).

According to the behaviour change model of Prochaska and Diclement knowledge is mandatory in adopting heart healthy lifestyles, but although these knowledgeable subjects know about healthy life styles, whether they really adopt them is a big question (Mullie and Clarys, 2011).

In a Canadian study by Potvin et al, behavior-related risk factors such as high fat diet, smoking and physical inactivity were more often recognised by Canadians as causing CAD with 60%, 52% and 41% awareness respectively than physiological risk factors such as hypertension and dislipidemia because most of the CV risk awareness and prevention strategies concentrated more on dietary fat, smoking and physical activity. Obesity and dietary salt restriction were the least recognised risk factors. One important point to note is that most of the excess salt consumed is invisible in the form of canned and tinned food, bread, cheese etc. Stress was

was another important factor recognised by Canadians, and although smoking was recognised as an important factor, people nevertheless continued to smoke (Potvin *et al.*, 2000).

In our present study, equal numbers were aware and ignorant of the fact that consumption of increased amount green leafy vegetables was a cardiovascular savior and a family history of CAD could lead to CAD in the offspring. 73.9% did not know that a sedentary life style could lead to CAD (Figure 9).

256 persons, mostly women from rural Mangalore studied to determine their awareness of CAD risk factors revealed that 57.4% had good knowledge but did not utilize this knowledge to improve cardiovascular health.

Maria Woringer et al developed a 26 points questionnaire to evaluate knowledge among NHS Health Check attendees on cardiovascular disease and risk factors in England's National Health Service Health Check preventive cardiovascular programme between 21 May 2014 and 28 July 2014 (Woringer *et al.*, 2017). Individual CVD risk was underestimated by as many as 40% of the population at large, while 20% overestimated their risk. Whether these questionnaires and awareness programmes really reduce the CVD risk has to be seen in future studies.

We, in our study had prepared a structured identical questionnaire in both English and Tamil which was distributed among patient attendant who were 18years of age or more in the various outpatient departments of our Hospital.

The Structured questionnaire was divided into 3 sections viz A,B,C. Section A consisted of questions pertaining to risk factors, Section B consisted question pertaining to symptoms & Section C consisted of questions pertaining to diet, with yes/no, do not know choices.

Investigators offering these questionnaires to study subjects should also follow up to see whether these programmes are effective in helping patients to make lifestyle changes.

CONCLUSION

Although our study was from a subset of rural Chennai and the subjects belonged to the middle or low income group and many of them having had no formal education , most of our patients were aware that chest pain, sweating, palpitation, increased consumption of fatty and oily food, diabetes mellitus, hypertension and smoking could be associated with heart disease. Although the majority knew that smoking was injurious, they still continued to smoke. Symptoms like dyspnea, edema and oliguria

were not recognised as symptoms of cardiac dysfunction. Most did not recognise sedentary life style as a cardiac risk factor. Almost half of the population did not associate obesity, consumption of low diet low in vegetables and fruits and family history of premature CAD as risk factors.

This study also revealed the need for implementation of large-scale community-based education programs to increase awareness of CVD and also follow up measures to see if they are carried out, both of which could go a long way to reduce CVD occurrence and which in turn would ultimately reduce health-care costs also.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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