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SHORT ARTICLE

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ASSESSMENT OF CARDIO-VASCULAR RISK AMONG ADULTS ATTENDING A RURAL HEALTH CENTRE USING WHO/ISH RISK PREDICTION CHART

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Abstract

Background: Most of the Cardiovascular disease (CVD) have multiple risk factors showing a cumulative effect on fatal outcomes like myocardial infarction and stroke. WHO/ISH Risk Prediction chart is a tool used to detect the individual risk of developing such an event which aid in taking preventive measures.**Objectives:**1. To assess the individual risk of developing fatal cardiovascular event in the next 10 year among adults (>40 years) visiting a Rural Health Training Centre (RHTC) based on the WHO/ISH (SEAR –D) risk chart 2. To analyse whether the study participants were motivated to adopt preventive measures on knowing their individual risk. **Methods**: A cross sectional study was done among 200 adults availing health services from RHTC between September to October 2017. The desired information was acquired using a pretested questionnaire. The WHO/ISH risk prediction chart for South East region used to assess the CVD risk among the participants. **Results**: Mean age of study participants was 55.26 ± 8.35 years. Proportion of male and female were 59% and 41% respectively. Our study found 28.5% to have more than 20% risk of which 6.5% of adults had more than 40% risk of developing CVDs in the next 10 years. Around 71 % of adults were motivated to take necessary precaution based on their risk score. **Conclusion**: The study indicates that there is huge burden of CVD risk among adults attending the RHTC. There is a need to conduct community based survey to assess the real burden and also to assess if perception and practise of individual changes on knowing their risk of CVD.

Key-words: Cardiovascular disease, WHO/ISH prediction chart, Rural.

Introduction

The major cause of mortality worldwide as well as in India are cardiovascular diseases (CVD). They comprise disorders of the heart and blood vessels, and includes coronary heart disease, cerebrovascular disease, raised blood pressure, peripheral artery disease, rheumatic heart disease, congenital heart disease and heart failure.[1] It was estimated that 17.7 million people died in 2015 from CVDs which constitutes 31% of all global deaths. Of these deaths, approximately 7.4 million and 6.7 million deaths were due to coronary heart disease and stroke respectively[2] .Several studies have proved that this mortality can be decreased by screening and specific intervention.[3,4,5]

In 2007, WHO in collaboration with the International Society of Hypertension (ISH) published two sets of CVD risk prediction charts for each of the 14 WHO epidemiologic sub-regions. One set of charts for settings where blood cholesterol can be measured and the other for those where it cannot.[6]Both sets included age, gender, smoking, diabetes and blood pressure. It was prepared based on standardized data on risk factor prevalence and relative risk for heart attack and stroke from each of the 14 specific WHO epidemiologic sub-regions, from the Comparative Risk Assessment Project conducted by the organization.[7]These risk prediction chart are simple ways to assess the approximate combined risk due to all risk factors and is expressed as 10 years risk of developing a heart attack or stroke. The usage of this chart has been recommended by WHO especially in low and middle income countries that do not have their own refined risk prediction charts.[8]

Currently India is facing a rapid health transition from Communicable disease to Non-Communicable Diseases (NCD) which account for around 60% of all deaths causing a considerable loss in productive years of life. These losses due to premature deaths attributed to heart diseases, stroke and diabetes etc. are also projected to increase over the coming years. The government of India has launched the National Programme for Prevention and

Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) in 2010 with focus on strengthening infrastructure, human resource development, health promotion, early diagnosis, management and referral to prevent and control major NCDs. One of the strategies employed under the programme is opportunistic screening at all levels in the health care system.[9]Keeping this in view and due to paucity of studies on usage of this tool to predict the risk of CVD among the general population, the current study was undertaken with the following objectives (1) To assess the individual risk of developing fatal cardiovascular event in the next 10 year among adults (>40 years) visiting an Rural Health Centre based on the WHO/ISH (SEAR –D) risk chart[10](2) To analyse whether the study participants were motivated to adopt preventive measures on knowing their individual risk.

Material and Methods

A cross-sectional study was conducted among 200 adults seeking health care at a Rural primary health carecentre in Sangendhi, Trichy during the period of September to November 2017. Inclusion criteria was those aged more than 40 years and willing to give consent. We excluded those with a known past history for any major cardiovascular disease (myocardial infarction and stroke). Consecutive sampling on participants was done till the required sample was obtained. Pre-structured interview questionnaire was used to collect sociodemographic details and to identify risk factors for CVDs. Physical examination of participants included measurement of height, weight and blood pressure. Blood sample was taken for those whose diabetic's status was not known. Informed and written consent was obtained from all participants. Institutional Ethics Committee approval was obtained before proceeding with the study.

Colour- coded WHO/ISH risk prediction chart for South East Asia (SEAR D)[10] was used to predict the 10-year risk of a fatal or non-fatal cardiovascular event based on gender, age, systolic blood pressure, smoking status and presence or absence of diabetes mellitus. Participants were considered to be diabetic if they were on medication or if the Random blood sugar showed a value >200mg at the time of investigation. Two reading of systolic blood pressure was recorded for each individual and mean value was taken to assess the CVD risk using WHO/ISH chart. Individual was classified as smokers, if they currently smoked or had quit smoking <1 year before the assessment.

Data entry was done Microsoft excel and descriptive analysis was done using SSPS version 21. The results are expressed in frequency and percentage.

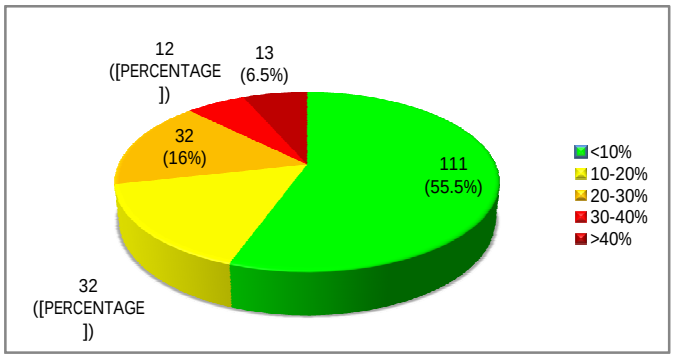
Results

Of the total 200 study participants, 118 were male (59%) and 82 female (41%). The mean age was 55.26 (± 8.35) years and mostly aged less than 60 years (67%). Only 22% were illiterate with others having at least primary schooling and above. Most of the elders (68%) were involved in skilled and semiskilled work relating to agriculture and had their monthly per capita income less than 3,100 Rs. Around 90% of the study participants were residing at a distance of less than 5 kms from rural health carecentre.

Table 1: Proportion of CVS risk factors among study participants (n=200)

CVS risk factors		Frequency	Percentage (%)
Diabetes mellitus	Present	137	68.5
	Absent	63	31.5
Family h/o of diabetes mellitus	Present	99	49.5
	Absent	101	50.5
Blood pressure	Normal	82	41
	Above normal	118	59
Family h/o of hypertension	Present	107	53.5
	Absent	93	46.5
BMI	<25.00	131	65.5
	≥25.00	69	34.5
Smoking	Present	59	29.5
	Absent	141	70.5

Graph 1: Risk of fatal cardiovascular event over the next 10 year among the study participants based on WHO/ISH risk prediction chart (n=200)



Graph 2: Proportion of study participants motivated to take preventive action on knowing their risk score (n=200)

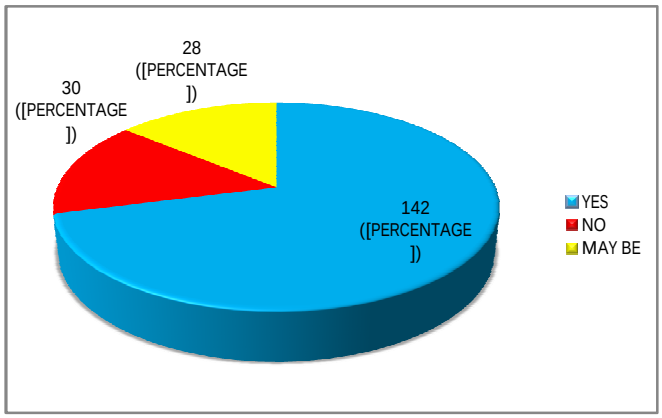


Table 1 shows the proportion of various cardiovascular risk factors among the study adults. We found 68.5 % and 59 % with diabetes and hypertension respectively, of which 43 elders (21.5%) had both. Around 34% had their body mass index (BMI) above 25 and 29.5% smoked tobacco among the study participants.

Graph 1 shows the prediction of cardiovascular event among the adults over the next 10 years using the WHO/ISH risk prediction chart (SEAR-D). More than half of the adults (55.5%) had less than 10 % risk of developing fatal cardiovascular event in the next 10 years. About 12.5% elders were at a risk of more than 30% of fatal cardiovascular outcome. Following the assessment of risk score, 71% of elders were motivated to taken some preventive action to decrease their risk of cardiovascular event in the future, where as 15% were not bothered. Another 14% felt they might try to take some measure (graph 2).

Discussion

Several studies[11,12,13] have documented increased mortality due to CVD in India. A study by ICMR[14] in Delhi during 2013 revealed that the rate of increase in cardiovascular risk factor was greater in rural area than compared to urban. Hence screening should be implemented at every possible level of healthcare to detect the risk factor and provide timely preventive measure. Our study which was done in rural setting found 44.5% of participants having >10% risk of CVD event. Similarly a study by Priya et al[15] done at a rural health training centre in north India during a camp revealed similar results (44.4%). This was the only other study we found that had used the WHO/ISH risk prediction chart without cholesterol measurement. Shanthi et al [16] in their research found this tool in predicting CVD risk equally effective as compared to the tool including the measurement of cholesterol. On the other side, Logaraj et al[17] in their study found only 20.1% aged more than 40 years to have >10% risk of CVD, but this was a community based study which explains the lower proportion as compared to a health centre based study which is mainly visited by those who have greater proportion of risk factor.

In our study there was very high proportion participants with diabetes (68.5%) and hypertension (59%). This was an expected finding since most of the patient visit our health centre to take treatment for the same. About 30% were smokers among our participant while a study[15] done in north India only 1.5% were found to be smoker. The reason stated that was, the participants were mostly followers of Sikh religion which prohibits smoking. Among the five risk factors (age, sex, diabetes, hypertension and smoking) that were included in WHO/ISH risk prediction chart used for this study, smoking is the only variable that can be easily controlled in a cost effective manner. Hence we suggest all health care provider to keep reinforcing this to their patients and explain the consequences of not doing so.

We found 34.5% with BMI of more than 34.5%, which was similar to a study done among rural population by Arunetal[18] and Logaraj et al [17]. We assessed the BMI of study participants even though it was not included as a risk factor in WHO/ISH chart. The purpose was to motivate them to reduce their weight which can be monitored in their next visit. Moreover most of the participants (93.5%) lived at a distance of less than 5kms from our health centre which we might encourage them to make frequent visit to monitor their gain at regular intervals.

Most of the studies[15,17,18,19,20] done to predict the risk of developing a fatal cardiovascular event over the next 10 year using the WHO/ISH chart have calculated the association between CVD risk percentage obtained from the chart with socio-demographic factors (age, sex, education etc.) and other individual variables like diabetes, hypertension, obesity etc. We have not done any such analysis in our study since the chart itself has been developed based on the most significant risk factors contributing to CVDs and finding significant association between them serves no purpose. Our objective wasonly to asses and identify those individual at greater risk of developing a fatal cardiovascular event in next 10 years and provide them with dietary advice, motivation for weight reduction and to get blood lipid profile tested so as to decide on the need to start antidyslipidemic drugs.

Apart from identifying individuals at greater risk to develop CVD, we also tried to analyse the impact of risk score in motivating them to adopt preventive measure. In our study 71% seemed willing to take some preventive measures on knowing their risk score. We suggest the WHO/ISH chart can also be used as an educational tool to encourage individuals to follow healthy lifestyle. But we need to conduct prospective follow up study to ascertain the proportion of individual actually practising healthy habits and taking their medications for diabetes or hypertension regularly.

A study[21] done using this screening tool in three low and middle income Asian countries concluded its benefits at both population and individual level. At population level it will benefit the policy planners to provide health service. At individual level it will be useful tool for clinician to decide the overall risk of patients based on multiple risk factors rather than a single risk factor. Moreover this tool is very simple to use, so even field staffs and community health workers can be trained on how to use it.

Conclusion: The WHO/ISH risk prediction chart is a very convenient tool that can be used for opportunistic screening of individuals at primary care centre to identify individual at greater risk of developing cardiovascular

disease. The participants in our study also found it motivating to follow healthy lifestyle which needs to be assessed on their follow up visit. We recommend community based study using the same to assess the burden at community level and implement large scale preventive measures.

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