ASSESSMENT OF CARDIOVASCULAR DISEASE RISK AND RISK PERCEPTION AMONG SCHOOL TEACHERS IN A NORTHERN DISTRICT OF KERALA

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With regards,

Dr Sruthi O

DECLARATION

I hereby declare that this dissertation, titled "Assessment of cardiovascular disease risk and risk perception among school teachers in a northern district of Kerala," is a bona fide record of my original research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published and unpublished work of others has been duly acknowledged in the text.

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CERTIFICATE

Certified that the dissertation titled — "Assessment of cardiovascular risk and risk perception among school teachers in a northern district of Kerala" is a record of the research work undertaken by Dr Sruthi O, in partial fulfilment of the requirements for the award of the degree of "Masters of Public Health" under my guidance and supervision.

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GLOSSARY OF ABBREVIATIONS

CVD	Cardiovascular diseases
IHD	Ischemic heart disease
WHO	World Health Organisation
ABCD	Attitudes and beliefs about cardiovascular disease risk
DASH diet	Dietary Approaches to Stop Hypertension (DASH) diet
H-SCALE	Hypertension Self-Care Activity Level Effects Scale
PA	Physical activity
TPB	Theory of Planned behaviour
LMIC	Low- and middle-income countries

ABSTRACT

Background: The purpose of this study was to assess the risk perception and actual CVD risk among the school teachers in a northern district of Kerala and to see whether the health behaviour practice is influenced by the risk perception. The study tried to explore the various factors that can affect the adoption and practice of healthy behaviours in a population with varying levels of CVD risk and risk perception.

Methods: A cross-sectional study was conducted among 403 school teachers aged 18–56 years in a northern Kerala district. A multi-stage cluster sampling method was used for selecting the participants, and data collection was done using a preformed interview schedule and physical measurements such as height, weight and BP were taken. Data analysis was done using SPSS version 25. CVD risk, risk perception, health behaviour practice, and morbidities among the study population were estimated. Descriptive statistics were used to summarise the data, logistic regression was done for assessing the association between risk perception and health behaviour practice.

Results: A small but significant and negative association was found between risk perception and health behaviour practices. Health behaviour was found to be poor among those with high levels of risk perception compared to those with low levels of risk perception (OR:2.32, 95%CI:1.40-3.82). Low perceived benefits and intentions to change behaviours as well as less knowledge about risk factors were also associated with poor health behaviours. Proportion of individuals with mismatched risk perception was found to be 48.6 percent. A high level risk perception was found to be associated with family history of CVD, multimorbidity, high levels of neuroticism and low perceived self efficacy.

Conclusion: Study participants had high level knowledge about CVD risk factors, which was associated with good health behaviours. Individuals with over risk perception were having poor practice of health behaviours. Such individuals were found to have high levels of neuroticism and with a low perceived self efficacy. The primary prevention of CVD through health behaviour promotion should take these factors also into consideration.

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

1.1 Background

We live in a world where more than 30% of people die from cardiovascular diseases (CVD) annually. Despite being largely preventable, CVD remains as a major cause of disability and premature death.(Roth, Mensah, Johnson, et al., 2020) The underlying pathology is atherosclerosis, which develops over many years and is usually advanced by time and the symptoms occur generally in middle age.(World Health Organization, 2007)

Various risk factors contribute to development of heart diseases and stroke. The modifiable risk factors for CVD include unhealthy diet, physical inactivity, tobacco use, and excessive alcohol consumption. These are the key behavioural risk factors which can lead to conditions like raised blood pressure, diabetes, high cholesterol, overweight, and obesity.(Cardiovascular diseases, n.d.)

The significant burden of cardiovascular disease is influenced by factors such as demographic transition, globalisation, sedentary lifestyles, and changes in dietary patterns. Primary prevention of cardiovascular diseases starts with the promotion of health behaviours among the population. Having a proper understanding of cardiovascular disease risk is essential for embracing a healthy lifestyle and developing habits that promote good health. Risk perception, a central psychological concept, plays a significant role in influencing the adoption and maintenance of health behaviour changes. It is crucial for individuals to have an accurate perception of their risk in order to make informed decisions and adopt a healthy lifestyle.(Guo et al., 2023)

In this study we are looking at association of risk perception to health behavioural practices and extent to which inappropriate risk perception exists among the study population.

1.2 Literature review

1.2.1 Global burden of cardiovascular diseases

Cardiovascular diseases (CVDs) account for utmost NCD (non-communicable diseases) deaths; an estimated 17.9 million people died from CVDs in 2019, of which 85% were due to heart attacks and strokes. Out of 17 million premature deaths due to NCDs, 38% were caused by CVDs. (Cardiovascular diseases (CVDs), n.d.)

According to Roth et al. (2020), cardiovascular diseases, primarily ischemic heart disease and stroke, are the primary causes of global mortality and a significant source of disability. From 1990 to 2019, the prevalence of CVD cases has nearly doubled, reaching 523 million, while the number of deaths has also increased. The burden in terms of disability-adjusted life years and years lived with disability has substantially grown over this period.(Roth, Mensah, Johnson, et al., 2020)

Modifiable risk factors contribute significantly to the majority of the global burden of cardiovascular disease (CVD). Insufficient control over these risk factors poses a substantial global challenge that necessitates innovative public health solutions. (Roth, Mensah and Fuster, 2020)

1.2.2 The main components of global CVD burden

The most common cardiovascular illness in the world is ischemic heart disease (IHD), whose prevalence and death rise with advancing age. While South Asia, North Africa, and the Middle East have the greatest age-standardised stroke prevalence, age-standardised mortality rates are still high in Eastern Europe and Central Asia. A second significant cause of CVD, stroke, gets worse with age, reaching its peak in people between 74 and 79. The disease burden is greatly impacted by heart failure, which is a complication of IHD, hypertensive heart disease, or cardiomyopathy/myocarditis. Among cardiovascular diseases, atrial fibrillation is the sixth most common cause of CVD-related mortality and disability. Rheumatic heart disease is the sixth main cause of disability from cardiovascular diseases and the fifth greatest cause of CVD-related mortality.(Joseph et al., 2017)

1.2.3 The burden of CVD in low and middle-income countries and India

While the risk factors for developing cardiovascular disease (CVD) are comparable globally, the changing lifestyle and health behaviours observed in low- and middle-income countries (LMICs) are playing a role in the increasing prevalence of CVD and associated mortality. More than 80% of deaths related to cardiovascular disease (CVD) occur in low- and middle-income countries. While developed countries have seen a decline in CVD-related deaths, there has been a significant increase in such deaths within LMICs.(Cardiovascular diseases, n.d.)

According to the World Health Organization, India contributes to 20% of global cardiovascular disease (CVD) deaths, particularly among the younger population. The Global Burden of Disease Study indicates that India has an age-standardised CVD death

rate of 272 per 100,000 population, which is significantly higher than the global average of 235.(Sreeniwas Kumar and Sinha, 2020)

The country is witnessing a rapid epidemiological transition with a rising burden of Non-Communicable Diseases (NCD) surpassing the burden of communicable diseases like vector-borne or water-borne diseases, TB, HIV, etc.(Yadav and Arokiasamy, 2014)

Within India, there are significant variations in CVD rates, with the highest rates observed in the states of Kerala, Punjab, and Tamil Nadu. These states also exhibit the highest prevalence of elevated cholesterol levels and blood pressure.(Sreeniwas Kumar and Sinha, 2020)

Asian Indians have a 20-50% higher mortality rate associated with Coronary-Artery-Disease compared to other populations. Therefore, it is crucial to proactively understand the role of risk factors in this emerging epidemic and implement effective measures for their control.(Jha et al., 1993)

Cardiovascular diseases contribute to a significant economic burden to the country. According to the World Health Organization (WHO), India was projected to experience a financial impact of $237 billion over a decade (2005-2015) due to the combination of reduced productivity and increased healthcare expenses resulting from the existing burden of cardiovascular disease.(Prabhakaran et al., 2016)

1.2.4 Primary prevention of CVD

According to the World Health Organization, as many as 80% of all heart attacks and strokes are preventable. The majority of deaths due to CVD are precipitated by risk factors such as high blood pressure, high cholesterol, obesity, or diabetes, which can, to a

large extent, be prevented or controlled through the consumption of a healthy diet, regular exercise and avoiding tobacco. Regular check of blood pressure, cholesterol levels and blood sugar levels is also very important.(*World Heart Federation*, n.d.)

Review done by Leonard A. Kaminsky and coworkers emphasise the significance of adopting a healthy lifestyle to prevent cardiovascular diseases. The authors discuss the various lifestyle behaviours that can contribute to reducing the risk of developing CVD. Engaging in regular physical activity and maintaining an active lifestyle is crucial in preventing CVD. The authors emphasise the importance of both aerobic exercise and resistance training, as they provide specific benefits for cardiovascular health. A healthy diet plays a vital role in preventing CVD, by consuming a well-balanced diet rich in fruits, vegetables, whole grains, lean proteins, and healthy fats while minimising the intake of processed foods, added sugars, and unhealthy fats.(Kaminsky et al., 2022) Maintaining a healthy body weight is essential for preventing CVD. The authors discuss the adverse effects of obesity on cardiovascular health and recommend strategies for weight management, including a combination of dietary modifications and regular physical activity.

The paper emphasises the detrimental effects of smoking on cardiovascular health. Quitting smoking is highlighted as a critical lifestyle change to reduce the risk of developing CVD.

Chronic stress has been associated with an increased risk of CVD. The authors discussed the importance of stress management techniques such as exercise, relaxation techniques, and social support in preventing and managing CVD. Sufficient and quality sleep is essential for cardiovascular health can be achieved by practising good sleep hygiene and obtaining an adequate amount of sleep on a regular basis.(Kaminsky et al., 2022)

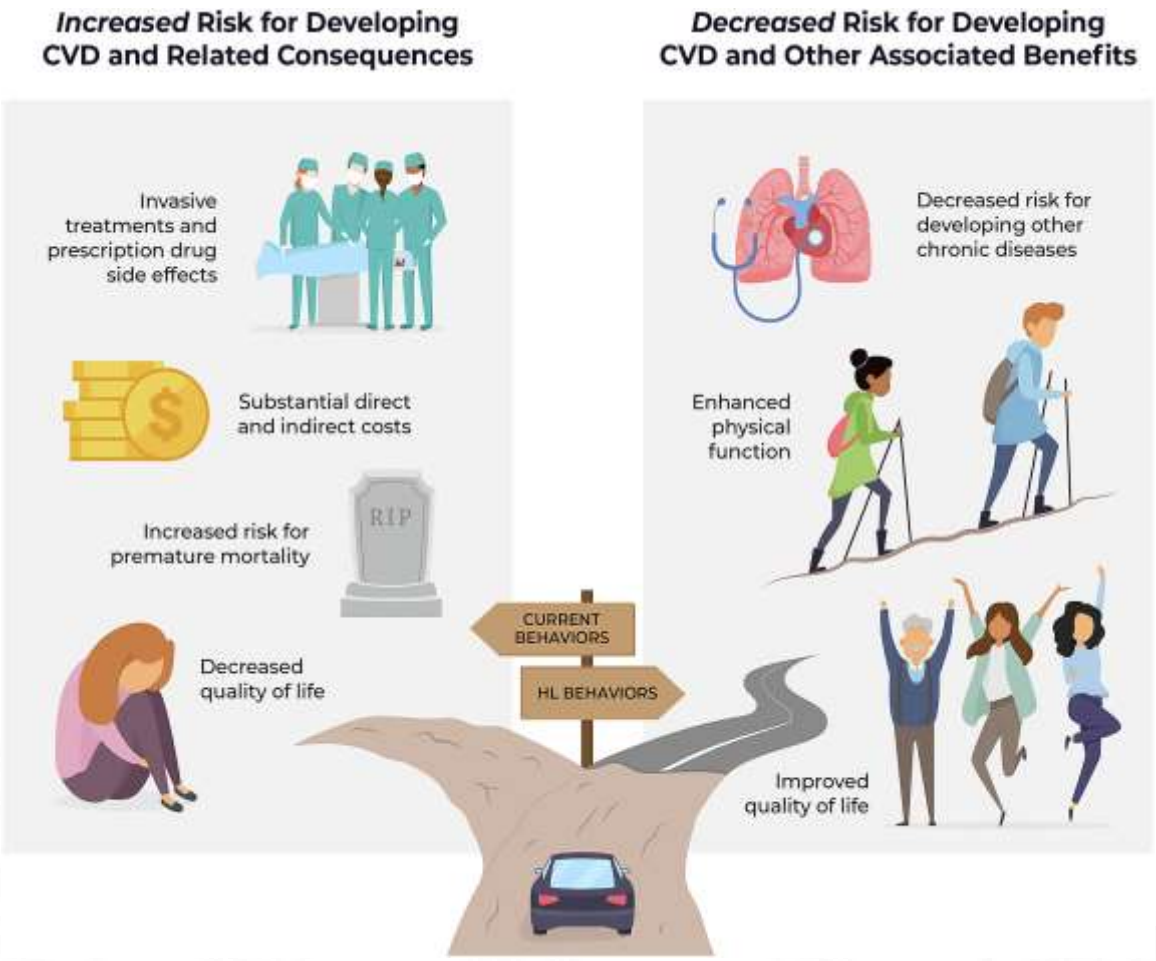


Figure 1.1 Lifestyle and CVD

Source :[The importance of healthy lifestyle behaviours in the prevention of cardiovascular disease - ScienceDirect]

The study concludes by highlighting that adopting and maintaining healthy lifestyle behaviours, including regular physical activity, a nutritious diet, weight management, smoking cessation, stress management, and adequate sleep, can significantly reduce the risk of developing cardiovascular diseases. The authors emphasise the importance of healthcare providers promoting these lifestyle changes and individuals taking responsibility for their own health to prevent CVD. (Kaminsky et al., 2022)

1.2.5 Components of health behaviour practices

1.2.5.1 DASH Diet

The DASH Diet, known as the dietary approach to stopping hypertension, is a versatile and well-balanced eating plan designed to promote a healthy heart. According to (Sacks et al., 2001), The DASH diet is a dietary pattern that involves a high intake of fruits, vegetables, whole grains, and low-fat dairy products, while limiting red meat, saturated fat, sugar-sweetened beverages, and sodium. (As outlined in Table 1.1). When following the DASH eating plan, it is important to choose foods that are low in saturated and trans fats, rich in potassium, calcium, magnesium, fibre, and protein, and lower in sodium.(DASH Eating Plan | NHLBI, NIH, 2021)

This eating plan has been proven to significantly reduce blood pressure levels, which is a major risk factor for cardiovascular diseases (CVDs)

Table 1.1 Food items included in the DASH diet

Food group	**Daily servings**
Grains	**6-8**
Meats, poultry and fish	**6 or less**
Vegetables	**4-5**
Fruits	**4-5**
Low-fat or fat-free dairy products	**2-3**
Fats and oils	**2-3**
Sodium	**2300mg**
Nuts, seeds, dry beans and peas	**4-5**
Sweets	**5 or less**

Table 1.1: DASH diet

Source:DASH Eating Plan | NHLBI, NIH

According to numerous studies, adopting the DASH diet lowers blood pressure as well as levels of blood sugar, lipids, and insulin resistance. The DASH diet is therefore seen as a beneficial supplement to pharmacological therapy for people with metabolic disorders. (Azadbakht et al., 2011)

A systematic review and meta-analysis explored the effects of the Dietary Approaches to Stop Hypertension (DASH) diet on cardiovascular risk factors. The study evaluates the impact of the DASH diet on blood pressure, lipids, glucose metabolism, and other relevant factors associated with CVD. The authors reviewed multiple randomised controlled trials and concluded that the DASH diet significantly reduces blood pressure, improves lipid profiles, and positively influences glucose metabolism. These findings support the use of the DASH diet as an effective strategy for the prevention and management of cardiovascular disease.(Siervo et al., 2015)

Nevertheless, despite the DASH diet's widely acknowledged advantages, it is not widely followed in many nations, including the United States (Warren-Findlow and Seymour, 2011) and some African nations(Epstein et al., 2012).

1.2.5.2 Engagement in physical activity

A Meta-analysis of Prospective Cohort Studies on the relationship between physical activity and the risk of cardiovascular disease (CVD) concludes that higher levels of physical activity are consistently associated with a reduced risk of CVD. The study demonstrates a dose-response relationship, indicating that greater levels of activity lead to greater risk reduction. The review also discusses potential mechanisms through which physical activity lowers CVD risk, such as improvements in blood pressure, lipid profile,

insulin sensitivity, and inflammation markers. The authors emphasise the importance of regular exercise and reaching recommended activity guidelines for optimal cardiovascular health. Overall, the review underscores the need for public health initiatives to promote physical activity as a means to prevent and manage cardiovascular diseases effectively. (Li and Siegrist, 2012)

A systematic umbrella review by William E Kraus et al. investigates the impact of physical activity on mortality and cardiovascular disease (CVD). The findings indicate that engaging in regular physical activity is associated with a lower risk of all-cause mortality and cardiovascular mortality. Additionally, participating in physical activity reduces the likelihood of developing CVD, including conditions like coronary heart disease, stroke, and heart failure. The paper emphasises the importance of setting and following country wise physical activity guidelines to improve overall health outcomes and decrease the burden of cardiovascular diseases.(Kraus et al., 2019)

Another study looked upon the relationship between physical activity and cardiovascular disease (CVD), specifically addressing the question of how much physical activity is necessary for cardiovascular health. The study says that the intensity and duration of physical activity influence cardiovascular health, with higher intensity and longer durations generally leading to greater benefits. Existing guidelines from organisations like the American Heart Association and the World Health Organization recommend a minimum level of moderate-intensity aerobic activity and muscle-strengthening exercises for adults. Study highlights current guidelines while emphasizing the need for personalized recommendations.

Prolonged sedentary behaviour is detrimental to cardiovascular health, regardless of physical activity levels. It is important to reduce sedentary time and incorporate regular

movement breaks. Personalized approaches to physical activity recommendations are necessary, considering factors like age, health status, and individual goals. The study raises the concern to refine understanding of the optimal amount and types of physical activity for cardiovascular health.(Carnethon, 2009)

1.2.5.3 Weight management practices

More than three-fourths (79%) of the general population had abnormalities in at least one of the lipid markers, and there was no difference between urban and rural areas, according to a 2014 Indian Council of Medical Research (ICMR) study. Strong risk factors for dyslipidemia include being a woman, obesity, sedentary behaviour, diabetes, dysglycemia, and hypertension.

A study was done to examine the benefits of modest weight loss in improving cardiovascular risk factors in overweight and obese individuals with type 2 diabetes. The study found that the intensive lifestyle intervention group achieved modest weight loss, resulting in significant improvements in cardiovascular risk factors compared to the control group. Participants in the intervention group experienced reductions in body weight, blood pressure, and triglyceride levels, as well as improvements in glycemic control and markers of inflammation. These improvements were sustained over the long term. The findings highlight the importance of lifestyle interventions, including calorie reduction, increased physical activity, and behaviour modification, in the management of cardiovascular risk factors in this population. (Rr et al., 2011)

1.2.6 Health behaviour promotion through intersectoral collaboration; Role of School health policies

A cross sectional study done in France investigated the health behaviours of teachers in comparison to the general working population. The findings of the study indicated that teachers generally displayed healthier behaviours compared to the general working population. Teachers were found to have higher rates of physical activity, lower rates of smoking, and better dietary habits. Additionally, they had lower levels of alcohol consumption and reported higher rates of regular health check-ups. However, the study also identified some areas where teachers could improve their health behaviours. Teachers had higher rates of sedentary behaviour and reported higher levels of stress. Moreover, a significant proportion of teachers did not meet the recommended guidelines for physical activity and fruit and vegetable consumption. The study concluded that while teachers exhibited certain positive health behaviours, there is still room for improvement. Interventions and policies should be developed to promote physical activity, reduce sedentary behaviour, manage stress levels, and encourage healthier dietary habits among teachers. These efforts can contribute to enhancing the overall health and well-being of teachers and the education workforce. (Gilbert et al., 2015)

A study conducted among school teachers in Benghazi, Libya, revealed significant findings indicating the necessity for intensive health education interventions targeting this specific group. The study emphasised that the knowledge and awareness of health-related issues among school teachers were inadequate. This knowledge gap highlighted the need for comprehensive health education programs tailored specifically for teachers to address their unique needs and promote healthier lifestyles. The results underscored the importance of focusing on key health topics such as cardiovascular disease prevention,

healthy eating habits, physical activity promotion, stress management, and the dangers of tobacco use. By implementing intensive health education interventions, schools can equip teachers with the knowledge and skills necessary to improve their own health behaviours and serve as role models for their students. These findings highlight the potential impact of targeted health education interventions among school teachers, as they play a vital role in shaping the health behaviours and knowledge of their students. By addressing the specific needs of this group, the study suggests that comprehensive health education programs can have a positive influence not only on the teachers themselves but also on the wider school community, fostering a healthier environment for all.(Greiw et al., 2010)

A study conducted among secondary school teachers in Oyo State, Nigeria, investigated their knowledge regarding cardiovascular disease (CVD). The study concluded that the knowledge of teachers about CVD was inadequate. The findings suggest a need for interventions and educational programs to improve awareness and knowledge among teachers, who play a crucial role in promoting health education to students. Enhancing their knowledge about CVD can contribute to better prevention and management strategies, leading to improved cardiovascular health outcomes in the community(Familoni and Familoni, 2011)

A randomized controlled trial to assess the Control of hypertension among teachers in schools in Kerala (CHATS-K), India (by using World Health Organization STEPS tools for non-communicable diseases risk factor surveillance.) shows that there is higher level of control of hypertension among school teachers, study explored why school teachers can act as role models for general population for hypertension control in the state(Mini et al., 2020)

The trial focuses on evaluating the effectiveness of interventions aimed at improving hypertension control among teachers. The interventions may include lifestyle modifications, medication adherence, and health education. The study assesses various risk factors associated with hypertension and their control rates, such as blood pressure levels, body mass index, dietary habits, physical activity, and tobacco use.The findings from the CHATS-K study will contribute to understanding the efficacy of interventions for hypertension management in this specific population. The results can guide future strategies and policies for promoting cardiovascular health and reducing the burden of hypertension among teachers in Kerala, India.(Mini et al., 2020)

Stradella project done in Italy suggests that school teachers can effectively manage CVD primary prevention program, resulting in students improving their habits and improvement of blood cholesterol profile. Well trained teachers were proved to be able to induce autonomous changes in dietary habits of school students and promoting primary prevention of CVD. The project aims to equip teachers with the necessary knowledge and skills to promote cardiovascular health among their students. By providing teachers with comprehensive training and resources, the Stradella Project empowers them to deliver health education, encourage healthy lifestyle behaviours, and create supportive environments within schools. Through this approach, the project aims to establish a foundation of cardiovascular disease prevention from an early age, fostering a lifetime of healthy habits and reducing the risk of cardiovascular disease in adulthood.(Aquilani et al., 2007)

1.2.7 Strategies adopted by developed countries

In developed countries such as US, the prevention of CVDs through health behaviour promotion considers all persons regardless of their CVD risk. The preventive services task force had recommended that behaviour counselling services for healthy diet and physical activity for cardiovascular disease prevention should be available for all individuals with or without obesity and any other risk factors. The findings of evidence review on primary care counselling interventions suggested that there was a positive outcome of small magnitude in terms of improvements in health behaviour practice. Health behaviour promotion should start with a community based approach rather than focussing only on high risk population. People who are interested and ready to impart health behaviour change will get most benefits from such interventions. (US Preventive Services Task Force et al., 2017)

1.2.8 Behaviour change theories in CVD prevention

There are several established frameworks and models that provide a comprehensive understanding of psychosocial and cognitive aspects in the context of CVD.

These models include:

The Health Belief Model: This model explores individuals' perceptions of susceptibility to CVD, severity of the disease, benefits and barriers to preventive behaviours, and cues to action.(Ali, 2002)

Transtheoretical Model of behaviour Change: This model proposes that individuals go through different stages of readiness to change behaviour, including precontemplation, contemplation, preparation, action, and maintenance, which can be applied to promoting healthy behaviours for CVD prevention.(Hashemzadeh et al., 2019)

1.2.8.1 Intentions to change behaviours; Theory of Planned behaviour

This model focuses on attitudes, subjective norms, and perceived behavioural control as predictors of individuals' intention to engage in preventive behaviours related to CVD. Intentions play a crucial role in predicting and influencing behaviour. The study titled "From Intentions to Actions: A Theory of Planned behaviour" aims to explain the relationship between individuals' intentions and their subsequent actions or behaviours. The study tells about how intentions are formed and how they translate into actions or behaviours According to the TPB, intentions are influenced by three key factors: attitudes towards the behaviour, subjective norms (perceived social pressure), and individuals' perceived ability to perform the behaviour. The TPB proposes that attitudes towards the behaviour are shaped by an individual's beliefs about the outcomes or consequences associated with the behaviour. Subjective norms are influenced by perceived social expectations and the importance individuals place on meeting those expectations. Perceived behavioural control reflects the individual's perception of their ability to perform the behaviour, taking into account both internal and external factors. The Theory of Planned behaviour has been widely applied in various health-related contexts, including the promotion of health behaviours, such as exercise, dietary choices, and adherence to medical recommendations.(Ajzen, 1985)

Norman, Conner, and Bell investigates the application of the Theory of Planned behaviour (TPB) in the context of exercise behaviour, with a specific focus on the moderating role of past behaviour. The researchers aimed to examine whether past behaviour, as an indicator of habit strength, would moderate the relationships proposed by the TPB model in predicting exercise behaviour. The findings of the study revealed that the TPB constructs predicted exercise intentions. Furthermore, exercise intentions were

found to be a significant predictor of actual exercise behaviour. Importantly, the study demonstrated that past behaviour moderated the relationships between exercise intentions and behaviour. Specifically, individuals with strong exercise habits were more likely to translate their intentions into actual exercise behaviour.The findings underscore the importance of considering past behaviour and habit strength when designing interventions to promote regular exercise and encourage behaviour change.(Norman et al., 2000)

A study by Khani Jeihooni et al. explores the use of the Theory of Planned behaviour (TPB) in understanding and predicting nutritional behaviours relevant to cardiovascular disease among women. The findings of the study suggest that the TPB constructs, including attitudes, subjective norms, and perceived behavioural control, significantly influenced women's intentions to adopt healthy nutritional behaviours for CVD prevention. The study highlights the importance of these psychological factors in shaping women's dietary choices and suggests that interventions targeting these factors could promote healthier eating habits and reduce the risk of CVD.(Khani Jeihooni et al., 2021)

1.2.8.2 Perceived self efficacy; The Social Cognitive Theory

This theory emphasises the reciprocal interaction between personal factors, environmental factors, and behavioural factors, highlighting the importance of self-efficacy, observational learning, and social support in influencing behaviours related to CVD risk. A review done by Lee, Arthur, and Avis explores the utilization of the Social Cognitive Theory (SCT) to promote physical activity among older adults who have risk factors for cardiovascular disease (CVD).The study examines key constructs of the SCT, including self-efficacy (belief in one's ability to engage in physical activity), outcome expectations

(beliefs about the benefits of physical activity), and observational learning (learning through observing others' behaviour), and their impact on promoting physical activity behaviour change in older adults with CVD risk factors. It emphasises the importance of addressing psychological factors such as self-efficacy, outcome expectations, and observational learning in designing effective interventions to encourage physical activity in this population. (Lee et al., 2008)

A Longitudinal Study" by Castillo-Mayén et al. examines the impact of self-efficacy and motivation to adhere to a healthy diet on the life satisfaction of patients with cardiovascular disease (CVD) over time. Higher levels of self-efficacy and motivation to follow a healthy diet were associated with greater life satisfaction among patients with cardiovascular disease. The study suggests that individuals who have confidence in their ability to maintain a healthy diet and possess strong motivation to adhere to it experience higher levels of life satisfaction.

Enhancing self-efficacy and motivation to adopt and maintain a healthy diet may not only contribute to better physical health outcomes but also positively impact patients' overall life satisfaction. Study emphasises the importance of considering psychological factors in the management and treatment of CVD.(Castillo-Mayén et al., 2020)

The chapter from The Wiley Encyclopedia of Health Psychology (The Social Bases of Health behaviour) provides an overview of research findings on the impact of self-efficacy on health behaviours and outcomes. It discusses the association between self-efficacy and behaviour change, as well as the potential mechanisms through which self-efficacy influences health behaviours. They also highlight the role of self-efficacy in various health-related domains, including physical activity, smoking cessation, medication adherence, and chronic disease management.(Schwarzer and Renner, 2009)

1.2.9 Role of Knowledge in adoption of health behaviours

A study conducted in Mysore, India investigated the knowledge and behaviours related to cardiovascular risk factors among low-income urban women. The study highlights the gaps in knowledge about cardiovascular risk factors among the study population. There found to be a higher prevalence of modifiable CVD risk factors among slum dwellers in India compared to their wealthier urban counterparts. The paper examines the influence of socioeconomic factors on cardiovascular risk factor knowledge and behaviours among low-income urban women. It discusses how economic constraints and social determinants may impact their access to healthcare, resources, and information. The study suggests that interventions targeting CVD risk factor knowledge could serve as an important initial step in health behaviour promotion and controlling heart disease within this vulnerable population.(Krupp et al., 2020)

A study done in Pennsylvania evaluated knowledge and risk perception among underserved individuals at high risk of CVD says that adoption of new behaviour is possible when people are knowledgeable about the risk factors, perceive themselves as susceptible to disease and able to believe that they are self efficient in doing something for preventing and curing the disease. Study suggests improving these by innovative educational strategies based on better understanding of cultural beliefs and life situations through the involvement of targeted community.(Homko et al., 2008)

Study on Cardiovascular risk factor knowledge and risk perception done among HIV-infected adults reports that despite having adequate risk factor knowledge, CVD risk perception was inaccurate. Study raises the need for improving risk perception and developing CVD risk reduction interventions for that population.(Mazalin Protulipac et al., 2015)

A study was conducted among individuals with hypertension in rural Malaysia on Risk perception of cardiovascular diseases and the results says that those hypertensives not on medications were unaware of their hypertensive status and those with uncontrolled blood pressures tend to underestimate their risk for future cardiovascular events. Study says that the people who underestimate their risk were actually at a higher risk, underestimation of risk was leading to lack of motivation to adopt a healthy lifestyle including appropriate health-seeking behaviour or even appropriate dietary choices. The study raises the need of strategies for aggressive lifestyle modification in the population.(Mohd Azahar et al., 2017)

In a study done among Dutch adults it is highlighted that there are disparities in health literacy based on socioeconomic factors, such as education and income. Individuals with lower education levels and lower incomes were found to have lower health literacy levels compared to those with higher education and income levels. The study concluded that improving health literacy among adults is crucial for promoting better health outcomes and reducing health inequalities. The findings underscored the need for targeted interventions and policies to enhance health literacy skills and ensure individuals have the knowledge and understanding to make informed decisions about their health.(van der Heide et al., 2013)

1.2.10 **The role of risk perception in CVD prevention**

Risk perception is the assessment of an individual's subjective appraisal of vulnerability or personal harm. It is an evaluation of the odds of having a specified event in the future. The risk perception reflects the knowledge of risk factors in comparison with one's own lifestyle. It is a central psychological construct that could affect one's action.As a result, improving knowledge and risk perception is an integral part of behavioural interventions for preventing CVD. Poor knowledge and the gap between actual risk and the risk perception of the general population impedes the attainment of better health outcomes.(Hassen et al., 2021)

Understanding CVD risk is a prerequisite for adopting a healthy lifestyle and habits conducive to health (Z et al., 2022). Risk perception is considered as a critical psychological construct that affects health behaviour change and maintenance.(Homko et al., 2008)

The study done by Woringer et al. focuses on the development of a questionnaire to assess patients' awareness of cardiovascular disease (CVD) risk within the context of the National Health Service (NHS) Health Check program in England. The researchers aimed to create a questionnaire that could effectively measure patients' understanding and awareness of their own CVD risk within the preventive cardiovascular program. The study involved the development and validation of the questionnaire, which included items related to CVD risk factors, knowledge, and perceptions. Through a comprehensive development process, the questionnaire was designed to capture patients' awareness of key aspects related to their cardiovascular health. The findings of the study demonstrate

that the developed questionnaire is a reliable and valid tool for evaluating patients' awareness of CVD risk within the NHS Health Check program. The questionnaire covers important domains such as risk factors, knowledge, and perceptions, providing a comprehensive assessment of patients' understanding of their cardiovascular health.The questionnaire's implementation can help healthcare professionals identify knowledge gaps and misconceptions, tailor interventions, and provide targeted education to improve patients' awareness of CVD risk factors and promote behaviour change for better cardiovascular health outcomes.(Woringer et al., 2017)

Most of the studies were done in hospital settings and some in community settings on perception of CVD risk factors. ABCD questionnaire for risk perception of cardiovascular diseases developed in England by Woringer M et al was cross-culturally translated, adapted, and the psychometric properties were evaluated to be used in community settings in countries like Belgium, Malaysia, China, Hungary etc. showed evidence of reliability and validity.

Study done by Mat Said et al. focuses on the translation, reliability, and validation of ABCD risk questionnaire (attitudes and beliefs about cardiovascular disease risk) in the Malay-speaking population. One important aspect examined in the study is risk perception, which refers to individuals' understanding and awareness of their own risk for developing CVD. Risk perception plays a crucial role in behaviour change, as it influences individuals' motivation and willingness to engage in preventive behaviours. By using a validated questionnaire like the ABCD-M, healthcare professionals can tailor interventions to address specific knowledge gaps and misconceptions related to CVD risk.

They can provide targeted education and support to enhance individuals' risk perception and promote behaviour change towards healthier lifestyles, ultimately reducing the risk of developing CVD.(Z et al., 2022)

A study conducetd in Belgium by Hassen et al. aims to validate the Dutch-Flemish translated version of the ABCD questionnaire for assessing cardiovascular disease (CVD) knowledge and risk perception among adults. The researchers conducted a validation study and collected data from a sample of adults. The translated ABCD questionnaire was administered to assess participants' knowledge about CVD and their perception of CVD risk. The study utilized statistical analyses to evaluate the validity and reliability of the translated questionnaire.(Hassen et al., 2021)

The validated questionnaire can be a valuable tool for assessing individuals' understanding of CVD and their perception of associated risks. In the context of CVD prevention through behaviour change, this questionnaire can provide insights into the knowledge gaps and risk perceptions that may influence individuals' engagement in preventive behaviours.

By accurately measuring CVD knowledge and risk perception, healthcare professionals and researchers can tailor interventions and educational programs to address specific knowledge deficits and misconceptions related to CVD. This can help promote behaviour change by enhancing individuals' understanding of the importance of preventive measures such as healthy lifestyle choices, medication adherence, and regular check-ups.(Hassen et al., 2021)

A subsequent study done using this validated scale aimed to investigate the cardiovascular disease (CVD) knowledge, risk perception, intention for a healthy

lifestyle, and socioeconomic disparities among adults in vulnerable communities in Belgium and England.

The study revealed disparities in CVD knowledge, risk perception, and intention for a healthy lifestyle based on socioeconomic factors, such as education and income. The results showed that individuals with higher education and income levels had better CVD knowledge, higher risk perception, and stronger intentions to adopt a healthy lifestyle. In contrast, those with lower education and income levels demonstrated lower levels of knowledge, risk perception, and intention for a healthy lifestyle.(Hassen et al., 2022)

In the study done in a Hungarian community sample for evaluating the psychometric properties of the ABCD Risk Perception Questionnaire, the researchers aimed to assess the reliability and validity of the questionnaire, which measures individuals' perception of their own risk for developing cardiovascular disease (CVD). The findings of the study suggests that the questionnaire can effectively measure individuals' awareness and understanding of their own risk for developing CVD. The psychometrically evaluated ABCD Risk Perception Questionnaire provides a valuable tool for assessing CVD risk perception in the community. It can serve as a foundation for future research and interventions aimed at enhancing risk perception, promoting healthy behaviours, and ultimately reducing the burden of cardiovascular disease.(Martos et al., 2020)

Studies conducted in China to focus on risk perception and its relationship with health behaviours, first study investigated the psychometric properties of the Chinese version of the Attitudes and Beliefs about Cardiovascular Disease Risk Perception Questionnaire.(Guo et al., 2022a)

A subsequent study explored cardiovascular disease risk perception among community adults in South China using latent profile analysis. The researchers aimed to identify distinct profiles of risk perception and examine their associations with health behaviours. Through their analysis, they identified different groups or profiles of risk perception among the participants. These profiles provided insights into variations in risk perception levels and their associations with health behaviours among community adults in South China. Study found that individuals with hypertension, drinking and better subjective health status were associated with CVD risk underestimation. Study suggests to pay attention to the indicators for different classes and identify underestimation group as early as possible. The findings underscore the importance of accurate risk perception assessment and interventions aimed at improving risk communication and promoting healthy behaviours.(Guo et al., 2023)

A study done in Nepal assessed participants' illness perception, including their beliefs, emotions, and understanding of their condition. The study also examined participants' cardiovascular health behaviours, such as medication adherence, dietary habits, physical activity, and smoking status. These results provide insights into the relationship between illness perception and cardiovascular health behaviours, suggesting the importance of addressing patients' perceptions and emotions related to their illness to enhance their engagement in positive health behaviours.(Shakya et al., 2020)

1.2.11 Actual versus perceived risk for CVD

A study done for analysing perceptions of CVD risk factors among Croatian older adults to determine awareness and differences between actual risk and perceived self-assessed risk of CVD found 24.5 % participants underestimated the risk while 75.7% did

overestimate their risk. Among the participants 23% and 49% were only able to recognize their blood pressure target & total cholesterol target respectively. No significant difference in perceptions was found between those who objectively had CVD risk and those who did not have it. Reason being partially attributed to the less knowledge of TC and BP target values

Findings from this study tells that risk perception was irrespective of presence or recognition of risk factors .A general idea of CVD as leading cause of mortality was high but, there existed a lack of specific knowledge of the CVD risk factors and their target values (Mazalin Protulipac et al., 2015)

Similar study done in Seychelles based on Heart Study III, a population-based survey data examined perception of CVD risk among adults and how it can be compared with their actual CVD risk. Only half of the considered population were able to report a risk estimate telling CVD risk is a difficult concept for people to understand. Study reported that 3.8% underestimated their CVD risk while 49% overestimated the risk. The study population were found to be optimistic in estimating risk with relative to peers while most of them over estimated the absolute risk. Study says that over estimation may cause unnecessary worries and overconsumption of healthcare services.(Alwan et al., 2009)

A cross-sectional study on perceived and actual risk of cardiovascular disease in patients with rheumatoid arthritis in Korea found suboptimal attainment of the CVD guideline goals in patients. When the chance of perceiving oneself as being high risk generally increased as actual CVD risk increased but found substantial gap between them. More than 90% of study population underestimated their risk, three by forth did overestimate

their risk. Study suggests counselling for patients about their high risk and detection of asymptomatic patients as crucial steps for adequate prevention of CVD(Boo et al., 2016)

A study was done to examine the relationship between patients' perceived risk of cardiovascular disease (CVD), their actual risk, and their willingness to consider and use prevention therapy. The researchers aimed to compare patients' perceptions of their CVD risk with their calculated actual risk and evaluate how these perceptions influence their willingness to engage in preventive therapies. The findings of the study revealed a significant discrepancy between patients' perceived risk of CVD and their actual risk. Many patients underestimated their actual risk, while some overestimated it. Importantly, patients who accurately perceived their risk were more willing to consider and utilize prevention therapies. The study highlights the importance of aligning patients' perceived risk with their actual risk to optimize preventive care These results have implications for healthcare providers, emphasizing the need for effective risk communication strategies. By addressing patients' risk perceptions and providing education on their actual risk, healthcare professionals can enhance patients' willingness to consider and adhere to prevention therapies.(Navar et al., 2021)

Another study done in the United States among ASCVD patients assessed the calculated ten-year risk and perceived CVD along with risk relative-to-peers evaluated the associations between risk estimates, statin use, and willingness to take prevention therapy. No correlation was found between patients’ estimates of their 10-year CVD risk and calculated 10-year risk. Most patients overestimate their 10-year risk, but hold an optimistic bias of their risk relative to age-, race-, and sex-matched peers (Frijling et al., 2004).

1.2.12 Personality and risk perception; role of neuroticism

Health psychology research done in 2022 had focused on investigating psychological factors that influence health behaviour change. Study examined reciprocal associations between risk perceptions for cardiovascular disease and health behaviours (i.e., physical activity, fruit/vegetable consumption), while accounting for key personality characteristics in middle-aged adults. (Thøgersen-Ntoumani et al., 2022)

Self-regulation or action self efficacy is an important tool suggested by the study to measure physical activity and vice versa, individuals high in neuroticism perceive themselves at greater risk of disease regardless of their behaviour. According to the results, high levels of neuroticism in middle age may hinder engagement in PA and consumption of fruit/vegetable behaviours. Study suggests future interventions targeting people with high levels of neuroticism could include mindfulness and the unified protocol.(Thøgersen-Ntoumani et al., 2022)

A study investigating the relationship between neuroticism and cardiovascular response, specifically focusing on blood pressure recovery in women, measured the neuroticism levels through psychological assessments and cardiovascular response by monitoring blood pressure during a stress task, and measuring the rate of recovery following the stressor.

Neuroticism, characterised by tendencies towards negative emotions, was associated with slower blood pressure recovery after a stressor. This suggests that individuals with higher levels of neuroticism may experience difficulties in returning their blood pressure to baseline levels after experiencing stress. The study contributes to the understanding of the

psychological factors that can influence cardiovascular response, specifically in the context of neuroticism and blood pressure recovery. By examining the impact of neuroticism on cardiovascular health, the findings highlight the potential importance of considering personality traits in assessing and managing cardiovascular risk factors.(Hutchinson and Ruiz, 2011)

A study had done to examine the causal relationship between neuroticism, mental health, and cardiovascular disease. The researchers investigate the influence of neuroticism, a personality trait characterised by emotional instability and negative affect, on both mental health outcomes and the development of cardiovascular disease. They explore the potential causal pathways linking neuroticism to mental health disorders and cardiovascular risk factors. The study provides evidence of neuroticism's role as a risk factor for cardiovascular disease, indicating that individuals with higher levels of neuroticism may be more susceptible to developing cardiovascular conditions. The study highlights the importance of considering neuroticism as a potential factor in understanding and preventing mental health disorders and cardiovascular disease. (Zhang et al., 2021)

1.3 Rationale for the study

Several studies have proved the role of psychological and cognitive factors in the behaviour change and prevention of cardiovascular diseases. As the Stradella project proved , school teachers can be trained to improve and promote health behaviours. Since school teachers are important educators of society, school health policies for behaviour modification can impact the prevention of cardiovascular diseases within the community. It is important to assess the cardiovascular risk perception and health behaviour practices

among school teachers. Also studies reported a better ability to report a perceived CVD risk, by individuals with a higher education and increased health consciousness will make it easy to study the CVD risk perception among school teachers. The present study tries to find the association between health behaviours and risk perception along with assessment of the accuracy of risk perception.

1.4 Objectives

Major objectives

1)To study how cardiovascular risk perception is related to health behaviour practices among the school teachers in Kannur district.

2)To assess the extent of mismatch between the perceived risk and the actual risk for cardiovascular diseases among the school teachers in Kannur district.

Minor objectives:

1)To study the factors associated with health behaviour practices among the study population.

2)To study the factors associated with risk perception for CVD among the study population.

CHAPTER 2

METHODOLOGY

2.1 Study design

This study is based on a cross-sectional study design.

2.2 Study setting

A community based study was conducted in schools in Kannur district, Kerala. According to the Sametham Kerala school data bank, there are a total of 1307 schools under the revenue district of Kannur, which include lower primary (LP), upper primary (UP), and high schools (HS). The study was conducted in randomly selected government and aided schools only, using a multi-stage cluster sampling strategy.

2.3 Study population

School teachers in Kannur district (age group 19-56 years) were the target population.

Inclusion criteria:

- Consenting participants

Exclusion criteria:

- Subjects with CVD

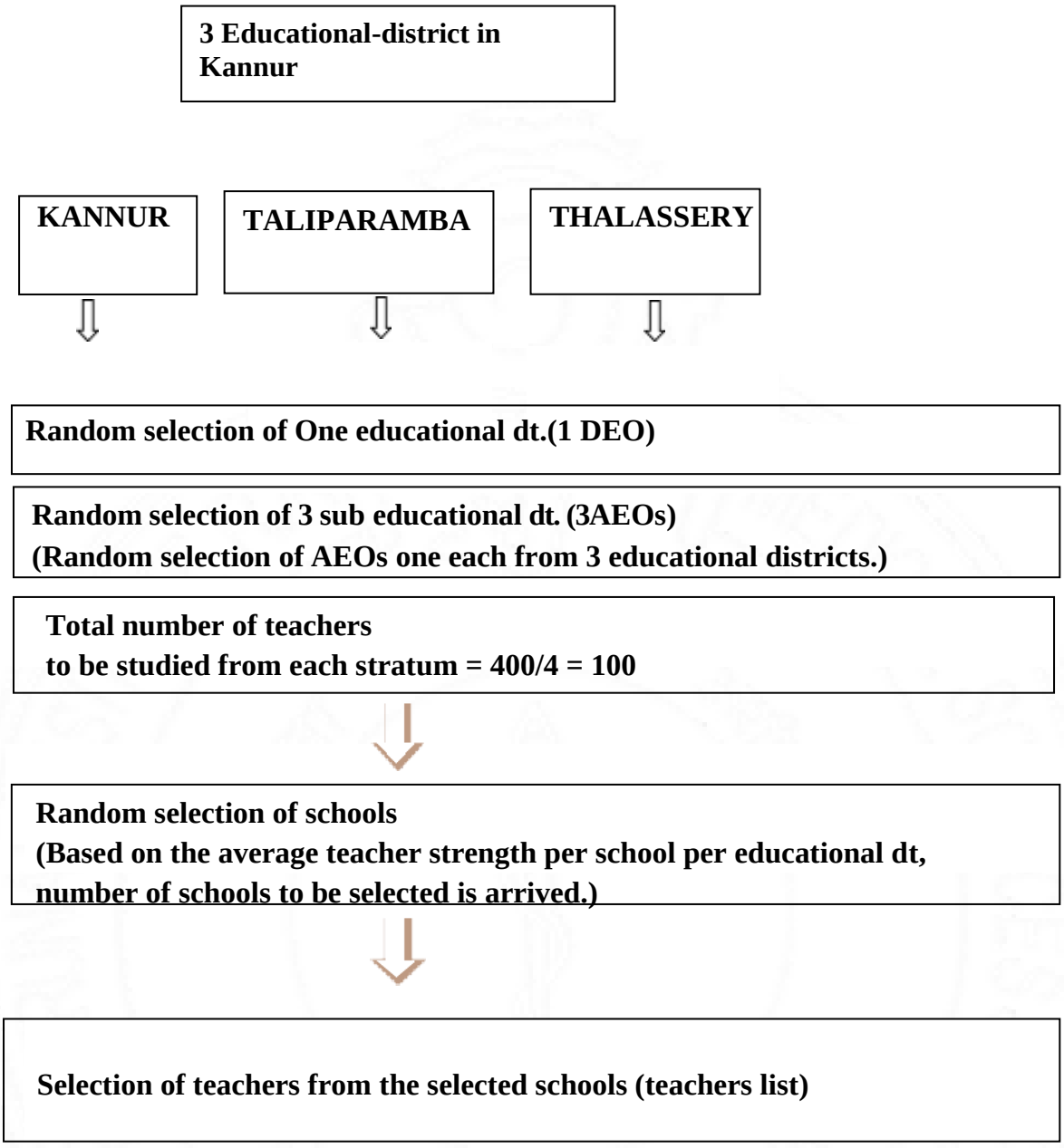
2.4 Sample size estimation

Based on the studies conducted among adults in Seychelles (Alwan et al., 2009) (a population based survey) and among older adults in Croatia(Mazalin Protulipac et al., 2015), the prevalence of inaccurate risk perception for cardiovascular diseases was expected to range from 49.7 to 51.8 percent. With six percent absolute precision for the 95% confidence interval, the estimated sample size was 267. The formula used for sample size estimation was $n=z^2 * P(1-P) / d^2$, where z = 1.96 for alpha at five percent and two-sided, P = 0.497, and d = 0.06. A design effect of 1.5 was given in order to overcome the clustering effect, making the calculated sample size 400.

2.5 Sample selection procedure

Multistage cluster sampling was done to recruit participants for the study. There are 3 educational districts in Kannur district, namely Kannur, Thalassery, and Taliparamba. There is a total of 3 DEO (District Educational offices) and 15 AEO (Assistant Educational offices) under which schools are categorised. High schools are under DEO and LP, and UP schools are under AEO. The first step was randomly selecting one of the three DEOs and one AEO from each of the three educational districts. Based on the estimated sample size, around 100 school teachers had to be interviewed from each of these 4 (1 DEO + 3 AEO) jurisdictions. School lists with teacher strength were collected from the selected AEOs and DEOs. Depending on the average strength of teachers per school within the selected DEOs and AEOs, the number of schools to be selected from each of them was decided. After that, a random selection of schools was carried out. The teacher's name list was collected from the office of each selected school, and the participants were selected randomly using the lottery method.

Figure 2.1 Sampling process



2.6 Data collection process

After obtaining permission from the respective authorities, the data collection was done over a period of two months in April and May of 2023. Permission for collecting the data was obtained first from the head of the school, and a list of teachers was also collected. In the case of denial of permission, replacement by the next school in the same AEO was done. There were cases where teacher strength was below average or selected teachers were unavailable for the study; in such situations, either all the teachers in that school were selected or additional schools were selected from the respective jurisdiction. The information sheet was well explained to the participants, and concerns and queries were clarified. Teachers from 33 schools who consented to participation were interviewed, and physical measures were recorded. The reasons given for non-participation were mainly the time constraints faced by the participants.

A total of 403 completed interviews, including the physical measurements, were recorded using the ODK data collection tool. Study participants who were willing to take lab tests for blood cholesterol and blood sugar on their own were encouraged to do so at their convenience.

2.7 Data collection instruments

A structured interview schedule was developed in English and translated into Malayalam. As per the participant's convenience, the language of the interview was chosen, and the interview responses were recorded. All questions were close ended. The participants had the liberty to answer or not answer the questions they wanted to, and their participation was completely voluntary.

The interview schedule was divided into six sections, as follows:

Section 1: Sociodemographic details

Age, sex, marital status, education, annual income, health insurance, and teaching experience

Section 2: Cardio vascular diseases knowledge and risk perception

Knowledge, perceived risk, 'perceived benefits and intention to change physical activity', and healthy eating intention were assessed using the ABCD risk questionnaire

Section 3: Perceived self-efficacy and neuroticism

- Perceived self-efficacy related to nutrition, physical activity, and alcohol resistance
- Neuroticism in terms of levels of nervousness or anxiety

Section 4: Morbidities and family history of premature CVD

Morbidities were recorded by verification based on prescriptions, lab reports, or medications

Section 5: Health behaviours

Diet, physical activity, practice of weight management, smoking and alcohol use which is recommended by JNC 7, assessed by using an adapted H-SCALE (Hypertension Self-Care Activity Level Effects Scale)(Warren-Findlow et al., 2013). H SCALCE is a validated tool for measuring health behaviours.

Section 6: Physical and biochemical measurements

Physical measurements: Height, weight and blood pressure

Instruments used for physical measurements

- Height-Stadiometer
- Weight-Digital weighing machine
- Blood pressure-Digital sphygmomanometer (OmRon HEM-7120)

Blood pressure measurement The systolic and diastolic blood pressure measurements were taken using an OmRon digital sphygmomanometer. The BP was measured in the left arm as per WHO guidelines. After obtaining the first reading, the investigator deflated the cuff fully and waited for three minutes in between the readings. Thus, a total of two readings were recorded. The mean of the two readings was obtained.

Biochemical measurements: Total cholesterol and fasting blood sugar available from lab reports or doctor's reports of not more than 6 months before data collection.

2.8 Definition of Variables used for analysing associations

Cardiovascular disease risk perception (Perceived CVD risk):

Eight items in the 'Perceived Risk of Heart Attack or Stroke Scale' of the 'ABCD Risk Questionnaire' (Guo et al., 2022b) measure the respondent's perception concerning their probability of developing CVD. A higher sum score means a higher perceived risk of having a heart attack or stroke. The sum scores were categorised into low and high based on the median.

Health behaviours

1) Diet quality: The Dietary Approaches to Stop Hypertension (DASH) diet is advised for primary and secondary prevention of cardiovascular chronic diseases.(Warren-Findlow et al., 2017) In terms of the DASH diet (DASH-Q scale), there were 11 items (Annexure 5) that assessed weekly diet practice. The item regarding salty food consumption was reverse coded. Responses for all items were summed to obtain the variable diet quality, with a possible range of scores from 0-77. Based on a median score of 43, diet quality among the study population, it was categorised as poor or good.

2) Physical activity engagement: It was assessed by two items of H SCALE , "how many days of the past 7 days did you do at least 30 minutes of physical activity?", and "how many days did you do a specific exercise activity other than what you do around the home or as part of your work?" Responses were summed (range from 0 to 14), based on a median score of 8, categorised as poor and good.

3)Weight management practice: Efforts taken for weight management in the previous month of data collection were assessed by agreement for ten items of H SCALE (Annexure 5) with a possible range of scores from one to five for each. Responses were summed, and based on a median score of 35, categorised as poor and good.

Health behaviour practice: Participants belonging to the poor category for all three of the above mentioned health behaviours were categorised as having poor practice of health behaviours. All others belong to the good practice of health behaviours category.

Knowledge: Knowledge about the risk factors for CVD was assessed by 10 items in the ABCD Risk Questionnaire, scores for which were summed, and median based categorisation done as having less or more knowledge about the risk factors for CVD.

Perceived Benefits and Intentions to Change PA: Seven items of the ABCD Risk Questionnaire (Annexure 5) assessed the perceived benefits of diet and physical activity and also the perceived readiness for change in regards to physical activity behaviour. The scores were summed and categorised into high and low based on the median.

Healthy Eating Intentions: Perceived readiness for change with regard to healthy dietary behaviour, assessed by three items in the ABCD risk questionnaire. The scores were summed and categorised into high and low based on the median.

Perceived Self-efficacy

Perceived self-efficacy for diet: refers to an individual's belief in their ability to effectively manage their diet, control their weight, and engage in preventive nutrition practices within the self-regulatory cycle.

Perceived self-efficacy for physical activity: refers to an individual's belief in their own ability to engage in and perform physical exercises appropriately. It is a crucial factor in motivating individuals to initiate and maintain regular physical activity over an extended period of time.

Neuroticism: refers to a personality trait characterised by a tendency to experience higher levels of anxiety, nervousness, and emotional instability when confronted with new or unfamiliar circumstances. Scores of 4 and 5 were considered high and others were considered low. Participants who score higher on neuroticism are more likely to feel anxious or nervous in such situations compared to those who score lower on this trait. It reflects a predisposition toward experiencing negative emotions and heightened reactivity in response to unfamiliar or challenging circumstances.

Actual risk for CVD in 10 years: Computed using the 2019 WHO CVD risk chart for South Asia.(south-asia.pdf, n.d.) (Figure 2.2) Laboratory based risk calculations include diabetes status, smoking status, sex, age category, SBP category, and total cholesterol category while non laboratory based risk calculation use, smoking status, sex, age category, SBP category and BMI category.

Both laboratory based risk (for the subjects with the available data) and non-lab based risk were calculated. Non-laboratory based CVD risk estimates were used for further analysis.

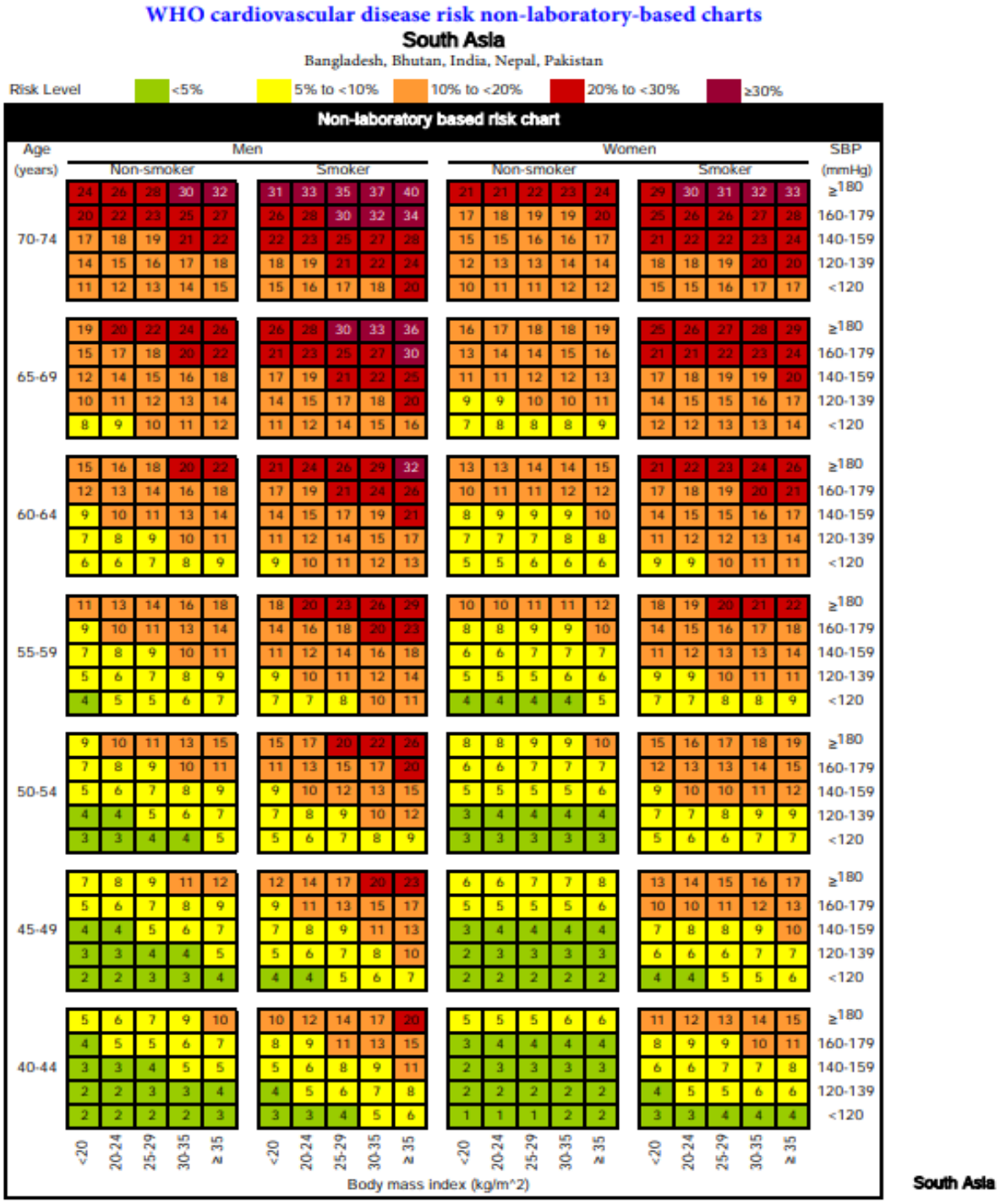


Figure 2.2 WHO CVD risk chart

Source: [south-asia.pdf (who.int)]

Mismatched risk perception: refers to the inappropriate self-assessment of the level of risk associated with developing cardiovascular disease. It involves both overestimating and underestimating the actual risk of CVD.

2.9 Data entry and analysis

The data collected using the ODK (Open Data Kit) was downloaded and saved as a Microsoft Excel document. After finishing data entry and data cleaning, the final data were analysed with the aid of IBM SPSS Statistics for Windows 25.

Categorical variables were summarised as frequencies and percentages; numerical variables were summarised as mean and standard deviation as well as median and range. The proportion of individuals with mismatched risk perception was estimated with a 95 percent confidence interval. An assessment of health behaviour practice and its association with cardiovascular risk perception was done. Further analysis was used to study the factors associated with risk perception for CVD. Chi square test was done to test the associations, which was followed by binary logistic regression to find the associations when adjusted for other variables. $p<0.05$ was considered statistically significant. Statistical significance was denoted by $*p<0.05$,$**p<0.01$,$***p<0.001$

2.10 Ethical considerations

The Institutional Ethics Committee of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala, reviewed the study, and clearance to conduct the study was given (SCT/IEC2014/MARCH/2023). A permission letter was obtained from the Deputy Director of Education. Before taking the interview, permission was received from the head of each school. Participation in the study was completely voluntary. The interview was conducted only after obtaining informed consent from the participants. The participant's identity, school identity, and personal information were kept confidential.

CHAPTER 3

RESULTS

This chapter briefly describes the outcome of data analysis in accordance with the study objectives. Data collected from a total of 403 randomly selected school teachers from the random clusters of government and aided schools in a northern Kerala district were analysed using IBM SPSS Statistics for Windows, version 25.

3.1 Socio-demographic profile of participants

Table 3.1 describes the socio-demographic profile of the study population. The age of the study participants ranged from 21 to 55 years, with a mean age of 41.4 years (SD = 8.9) and a median age of 42. Three fourth of the participants (75.4%) were females, and the rest (24.6%) were males. This pattern remained almost similar within both the young (79.7% females) and old age groups (70.7% females). 4.5 percent of the study participants refused to say their marital status; among those who reported, the majority were married (85.5%), while 3.3 percent were living without a spouse, either separated or widowed, of which the majority were females (92.3%) (p value = 0.001). Over one tenth (11.2%) were unmarried, with the majority of them (90.7%) (p value<0.0001) belonging to the younger age group. The study population belongs to a highly educated group, with a minimum graduate degree for all and 34.5 percent holding a postgraduate graduate degree as well. No distinction in educational status was found between the sexes or age groups.

Table 3.1 Sociodemographic characteristics of the study population (n = 403)

Variable	Category	N (%)
Age	Younger <=42	212(52.6)
	Older >42	191(47.4)
Sex	Male	99(24.6)
	Female	304(75.4)
Marital status	Currently married	329(85.5)
	Never married	43(11.2)
	Separated/Widowed	13(3.3)
Education	Graduated	264(65.5)
	Post-graduated	139(34.5)
Annual household income	<4 lakh	209(52.4)
	>=4 lakh	190(47.6)
Teaching experience	<=12 years	203(50.4)
	>12 year	200(49.6)
Health insurance	No health Insurance	65(16.2)
	Insured	337(82.2)

The annual household income varies from 10,000/- rupees to 20 lakhs, with a mean income of 4.52 lakhs (SD=3,05,747/-). Mostly the young age group (65.9%) reported having a household income less than Rs. 4 lakh annually, and around the same proportion of the older age group (62.3%) reported having a household income more than Rs. 4 lakh annually. (p value <0.0001).

The teaching experience varied from 1 to 35 years, with a mean experience of 13.9 years (SD = 9.7). The majority of the participants had at least one health insurance plan (82.2%), either government (68.7%), private (4.5%), or both (10.7%). The sociodemographic picture reflects a literate population with varying economic backgrounds and increased health consciousness.

3.2. Prevalence of CVD risk factors among the study population

3.2.1 WHO CVD risk chart-based categories of risk factors

In the updated WHO CVD risk chart 2019, the actual CVD risk for the next ten years can be predicted based on the levels of several risk factors. Details of these risk factors are given in table 3.3, subsequent tables describe the prevalence of other risk factors for CVD.

Table 3.2 Categorisation of risk factors -WHO CVD risk chart based (n = 403)

CVD risk factors	Category	N (%)
Age (years)	<45	243(60.3)
	45-49	65(16.1)
	50-54	67(16.6)
	55-59	28 (6.9)
Systolic BP(mmHg)	<120	209(51.9)
	120-139	142(35.2)
	140-159	44(10.9)
	160-179	8(2)
	>=180	0(0)
Body Mass Index(Kg/m^2)	<20	26(6.5)
	20-24	168(41.8)
	25-29	173(43)
	30-34	33(8.2)
	>=35	2(0.5)
Total cholesterol (mmol/l)	<4	50(19.6)
	4.4-4.9	107(42)
	5-5.9	71(27.8)
	6-6.9	23(9)
	>=7	4(1.6)

The prevalence of overweight (22.6%) and obese (51.7%) individuals was high among the study population (Based on Indian specific guidelines, a BMI of 23-24.9 is considered overweight, and a BMI of 25 and above is considered obese). Smoking and alcohol consumption were reported to be very low among the study population. (Table 3.3)

Table 3.3 Prevalence of risk factors for CVD (continued) (n = 403)

CVD risk factors	N (%)
Smoking	1(0.2)
Alcohol Consumption	8(2)
Family history of premature CVD	67(17.1)

Table 3.4 Prevalence of morbidities among the study population (n = 403)

Morbidities	N (%)
Hypertension	84(20)
Dyslipidemia	97(36.6)
Diabetes	32(11.6)
COPD	49(12.2)
MSK	83(20.6)
CKD	4(1)
Anaemia	24(6)
Thyroid	30(7.4)
Varicose vein	12(3)
Vision problem	95(23.6)
Others	65(16.1)
Multimorbidity	132(32.8)

Table 3.4 represents the various morbidities levels within the study population. Other major morbidities reported were cancer, skin diseases, fatty liver disease, depression,

PCOD, migraine, and gastric ulcer. Most of the participants reported using reading glasses for mild vision problems. Similarly, musculoskeletal disorders were also commonly reported by the participants. More than one third of the study population were found to have disparities in their lipid profile. 20% of the participants were hypertensive, and over a tenth were found to be diabetic. Furthermore, a significant proportion of participants (32%) exhibit multimorbidity.

3.2.2 Prevalence of behavioural risk factor for CVD

Table 3.5 represents the pattern of health behaviour practices among the studypopulation. More than half (54.2%) of the study population's engagement in moderate and intense physical activities was reported to be poor. Nearly half of the study participants (48.1%) followed a diet of good quality, they werehaving better DASH diet adherence. Weight management practices were found to be poor among more than half of theparticipants (51%).

Table 3.5 Prevalence of health behaviours among the study population (n= 403)

Sl. no	Variable	Mean (SD)	Median (Mini-Max)	Category	N (%)
1	**Physical activity engagement**	8.43(3.55)	8 (0-14)	**Good**	184 (45.8)
				Poor	218 (54.2)
2	**Diet quality**	43.11(10.81)	43(6-72)	**Good**	194 (48.1)
				Poor	209 (51.9)
3	**Adherence to weight management**	34.49(5.45)	35(10-46)	**Good**	194(49.0)
				Poor	202 (51.0)

3.2.3 Psychological and cognitive factors in the context of CVD; Assessment of cardiovascular risk perception

Table 3.6 represents the four dimensions of ABCD risk scale, including risk perception for CVD. From a possible range of scores from 0-32 on the scale, the study population's risk perception or perceived risk scores ranged from a minimum score of 8 to a maximum score of 28.

Table 3.6 Distribution of participants by their risk perception, knowledge, perceived benefits and intention to change PA and healthy eating intention (n=403)

Variable	Mean (SD)	Median (min-max)	Percentage score (min-max)	Category	N (%)
Risk perception	17.23(3.88)	17(8-28)	53.13(25-87.5)	**Low**	207 (51.4)
				High	196 (48.6)
Knowledge	8.72(1.16)	9(5-10)	90(50-100)	**Less**	286 (71)
				More	117(29)
Perceived benefits and intention to change PA	21.79(2.69)	21 (10-28)	75(35.7-100)	**Low**	213 (53.1)
				High	188(46.7)
Healthy eating intention	7.88(1.88)	8 (3-12)	66.67(25-100)	**Low**	221(54.8)
				High	182(45.2)

Table 3.6 shows that around half (51.4%) of the study population was reported to have high levels of risk perception.

Perceived benefits and intentions to change diet and physical activity (PA) behaviours were high among nearly half (45 to 46%) of the study population.

Nearly three fourth of the participants (71%) gave correct answers to nine out of ten questions on cardiovascular risk factors. Thirty percent of the study population got their full answers correct. The median knowledge score was very high (9 out of 10) among the study population.

3.2.4 Health behaviour practice

(A single variable to assess health behaviour by combining all three behaviours; adherence to physical activity, DASH diet and weight management)

Table 3.7 Prevalence of health behaviour practice; combining all three health behaviour practices together

Variable	**Category**	**Four subcategories** of health behaviour practice	**N (%)**
Health behaviour Practice (n=395)	**Good practice of health behaviours (n=303)**	Good practice of all three behaviours	78(19.7)
		Good practice of any two behaviours	106 (26.8)
		Good practice of only one behaviour	119 (30.1)
	Poor practice of health behaviours	Poor practice of all three behaviours	92 (23.3)

Among the study population's overall health behaviour practice when analysed, it was found that health behaviour among 23.3% of participants was poor (table 3.9). Only around 19 percent of the study population was found to follow good practice of all three behaviours.

3.3 Health behaviour practices and risk perception; Correlation

Table 3.8 Correlation between risk perception and health behaviour practices (n = 403)

	Diet Quality	Physical activity engagement	Weight management	Health behaviour practice (four categories based)
Risk perception	-0.153**	-0.107**	-0.127*	-0.183**

From table 3.10 it is clear that the relation between risk perception and health behaviours is such that a weak negative but statistically significant association exists between the two.

An individual with a high risk perception will be having poor health behaviour practice while one with a low risk perception will be having good practice of health behaviours.

3.4 Finding the extent of mismatched risk perception

3.4.1 Calculated actual risk for CVD (WHO CVD risk prediction)

Both laboratory based and non laboratory based calculations gave similar results for 10 year CVD risk among the study population. The chance of getting a CVD among the study population was found to be less than 10 percent as per non-laboratory based risk calculation.

Table 3.9 Computed actual risk for CVD among the study population (n = 403)

	Category	Min-Max	Mean (SD)	Median
10 Year CVD Risk Calculated	**Laboratory measurements-based (n=255)**	1-13	2.82 (2.03)	2
	Non-laboratory measurements based (n=403)	1-8	2.59 (1.59)	2

The actual CVD risk for 10 years varies from 1-13% with a median risk score of two percent. More than half (57.8) of the participants were found to be having an actual CVD risk below two percent.42.4 percent were found to be having actual risk above 2 percent.

3.4.2 Extent of mismatch between actual VS perceived risk for CVD

Table 3.10 Extent of mismatch between perceived and actual risk for CVD (n = 403)

Variable	Category	Subcategory	N (%)	Total N (%)	95% CI
Risk perception for CVD	**Mismatched risk perception**	**Underestimation**	85(21.1)	196(48.6)	43.72-53.48
		Overestimation	112(27.5)		
	Appropriate risk perception			207(51.4)	

The perceived CVD risk scores on ABCD risk scale and the actual CVD risk scores calculated were compared. Around half of the participants were found to have an appropriate level of risk perception for CVD and the other half were found to have a mismatched level of risk perception for CVD.

More than 20 percent of the study population underestimated their risk, their actual risk was higher than what they perceived. 27.5% of the study population were at a low actual risk but perceived their actual risk as high (Overestimation).

3.5 Exploring the factors associated with health behaviour practice.

3.5.1 Bivariate analysis results; finding the factors associated with health behaviour practice

When the sociodemographic factors and health behaviours were compared, a nearly significant (p value =0.06) association was found between the income status and health behaviours. Participants with a higher annual household income were reported to be practising health behaviours more than others. (Table 3.11)

Compared to males, females were reported to have good health behaviour practice, and the younger age group was found to be having better health behaviour practices compared to the older age group. Participants with more than one health insurance were found to be practising more health behaviours compared to those with only one insurance followed by those with no insurance at all. But all these findings were found to be not statistically significant.

Those with high levels of perceived benefits and intentions to change behaviour were found to have significantly high levels of good health behaviour practices. (Table 3.11) Those with high level of knowledge about the CVD risk factors (80%) were found to be having better health behaviour practice compared to others , but the difference was not significant.

Not much difference was found between the prevalence of health behaviour practice among those with and without multimorbidity; similar results were found when

participants with high and low levels of neuroticism were compared. These results were also not statistically significant.

A significant association (p value 0.03) was found between both perceived self efficacy for diet and physical activity and health behaviour practice. After studying more about risk perception by analysing its associations (Table 3.14), it was found that these psychological factors are well connected to risk perception with a very high significance level. Hence, further analysis of risk perception was done to see how all these factors interact with risk perception and finally influence health behaviour.(Table 3.15)

Table 3.11 Factors associated with health behaviour practice; bivariate analysis results

Variable	Category	Health behaviour practice N (%)		p value
		Poor (n=92)	Good (n=303)	
Income	**Above 4 lakh**	36(19.44)	137(80.6)	0.06
	Up to 4 lakh	56(27.3)	149(72.7)	
Risk perception	**High**	59(30.3)	136(69.7)	0.001**
	Low	33(16.5)	167(83.5)	
Knowledge	**More**	23(20.0)	92(80.0)	0.321
	Less	69(24.6)	211(75.4)	
Perceived benefits and intention to change PA	**High**	30(16.2)	155(83.8)	0.001**
	Low	62(29.8)	146 (70.2)	
Healthy eating intention	**High**	32(17.9)	147(82.1)	0.020*
	Low	60(27.8)	156(72.2)	

3.5.2 Factors associated with health behaviour practice; Multivariate analysis results

Table 3.12 Factors associated with health behaviour practice; Results of logistic regression

Variable	Category	Crude Odds ratio	Adjusted Odds ratio	95% CI	p value
Annual household income	**Above 4 lakh**	1.56	1.58	0.94-2.54	0.069
	Up to 4 lakh	Reference	Reference		
Knowledge	**More**	1.308	1.45	0.80-2.47	0.191
	Less	Reference	Reference		
Risk perception	**High**	Reference	Reference		0.001**
	Low	2.19	2.32	1.40-3.82	
Perceived benefits and intention to change PA	**High**	2.19	2.29	1.38-3.79	0.001**
	Low	Reference	Reference		
Healthy eating intention	**High**	1.76	1.66	1.01-2.75	0.047*
	Low	Reference	Reference		

Table 3.12 shows the results from the binary logistic regression analysis. Variables that showed a significant association with the health behaviour practice in the bivariate analysis and those associated variables reported by other studies were included in the multivariate analysis.

Individuals with a high annual household income were found to be around 1.6 times more likely to engage in health behaviour practices than the individual with a lesser income status when adjusted for other variables. But the significance was less with a p value of 0.069. Those who were more knowledgeable about CVD risk factors were found to be 1.5 times more likely to engage in health behaviour practice than individuals who were less knowledgeable, but no statistical significance was obtained.

Compared to individuals with a high level of risk perception, those with a low level of risk perception were found to be 2.32 (95% CI 1.40 -3.82) times more likely to engage in health behaviour practices when adjusted for other variables. Similarly, individuals with high levels of perceived benefits and intention to change physical activity, and individuals with high healthy eating intentions compared to those without, were found to be more likely to follow a good health behaviour practice.

3.6 High risk perception and health behaviours; results of bivariate analysis

Table 3.13 Prevalence of health behaviours in individuals with different levels of risk perception

Variable	Category	Risk perception		Chi-square test p value
		Low (n=207)	High (n=196)	
Physical activity engagement	Poor	101(49.0)	117(59.7)	0.032*
	Good	105(51.0)	79(40.3)	
Diet quality	Poor	92(44.4)	117(59.7)	0.002**
	Good	115(55.6)	79(40.3)	
Adherence to weight management	Poor	90(44.8)	112(57.4)	0.012*
	Good	111(55.2)	83 (42.6)	

Table 3.13 compares the prevalence of various health behaviours followed by individuals having high and low levels of risk perception. Among those participants with high risk perception, health behaviour practice was found to be poor. Among those with low levels of risk perception, health behaviour practices were better. All health behaviours assessed were found to be prevalent among those with low levels of risk perception compared to those with high levels of risk perception.

Nearly 60 percent of individuals with high risk perception were found to have poor diet quality (59.7%), poor engagement in physical activity (59.7%), and poor practice of weight management (57.4%). More than half of the participants with low risk perception were found to have good diet quality (55.6%), good physical activity levels (51%), and good weight management practices (55.2%). Associations were found to be statistically significant.

3.7 Factors associated with risk perception

3.7.1 Factors associated with risk perception; results of bivariate analysis

Table 3.14 represents the associated factors of risk perception for CVD. When bivariate analyses were done for risk perception, it was found that there exists a highly significant difference in the risk perception levels between those individuals who were multimorbid

and those who were not. Individuals with multimorbidity had higher levels of risk perception, more prevalent (61.4%) than those without (42.4%).

Table 3.14 Factors associated with risk perception (n = 403)

Variable	Category	Risk perception		p value
		Low n (%)	High n (%)	
Morbidity	**<2 condition**	156(57.6)	115(42.4)	<0.0001**
	>=2condition	51(38.6)	81(61.4)	*
Family history of premature CVD	**No F/H**	179(55.2)	145(44.8)	0.001**
	F/H	22(32.8)	45(67.2)	
Neuroticism	**Low**	176(55.2)	143(44.8)	0.003**
	High	31(36.9)	53(63.1)	
Perceived Self-efficacy diet	**Low**	168(48.4)	179(51.6)	0.001**
	High	39(72.2)	15(27.8)	
Perceived Self-efficacy PA	**Low**	89(43.2)	117(56.8)	0.001**
	High	115(59.6)	78(40.4)	

Study population with family history of premature CVD were found to be having higher level of risk perception (67.2%) than those without (44.8%).

Psychological factors such as perceived self efficacy and neuroticism were found to be associated with risk perception for CVD. Individuals high in neuroticism as well as those having a low level of perceived self efficacy for physical activity and diet were found to have high levels of risk perception.

Among the participants with low neuroticism, 44.8% had a high risk perception, while among those with high levels of neuroticism, more than 60 percent (63.1%) had a high risk perception.

Among the participants with high levels of perceived self efficacy for diet, only 27.8 percent had a high risk perception, while among those with high levels of perceived self efficacy,more than half of them had a high risk perception. For those with high levels of perceived self efficacy for physical activity, around forty percent perceived a high risk, and for those with low self efficacy, nearly sixty percent perceived a high risk.

All these associations were found to have high statistical significance, with p values less than 0.005

3.7.2 Factors associated with high risk perception- findings of multivariate analysis

Table 3.15 shows the multivariate analysis results. The bivariate analysis showed significant associations between risk perception and independent variables, which were analysed by a logistic regression model to quantify these associations and get results adjusted for other variables to understand the independent impact of each variable. It was found that compared to those without multiple morbidities, those with multimorbidity are 2.09 times more likely to develop a high risk perception for CVD. Those with a family history of premature CVD are 2.25 times more likely to develop a high risk perception than those without. Individuals high in neuroticism were 1.9 times more likely to develop a high risk perception than those with low neuroticism. Individuals with low perceived

self efficacy for diet are 2.68 times more likely to perceive a higher risk for CVD compared to those with high perceived self efficacy for diet. The odds of high risk perception among individuals with high levels of perceived self efficacy for physical activity compared to those with low level was found to be 1.48, but the result was less significant with p value=0.07

Table 3.15 Factors associated with high risk perception -Logistic regression results (n=403)

Variable	Category	Crude OR	Adjusted Odds ratio	95%CI	p value
Morbidity	**<2 condition**	reference	reference		0.002**
	>=2condition	2.15	2.09	1.32-3.29	
Family history of premature CVD	**No F/H**		reference		0.006**
	F/H	2.53	2.25	1.26-4.03	
Neuroticism	**Low**	reference	reference		0.015*
	High	2.104	1.92	1.13—3.27	
Perceived Self-efficacy_Diet	**Low**	2.77	2.68	1.34-5.38	0.006**
	High	reference	reference		
Perceived Self-efficacy _PA	**Low**	1.94	1.48	1.34-5.34	0.079
	High	reference	reference		

CHAPTER 4

DISCUSSION AND CONCLUSION

A community based cross sectional study was conducted among 403 school teachers in Kannur district, Kerala, to assess the actual risk, risk perception, and health behaviour practices. The extent of mismatch between the actual and perceived risk for CVD was found to be 48.6 percent (95%CI =43.72-53.48) which was similar to studies done in Croatia(Mazalin Protulipac et al., 2015) and Seychelles (Alwan et al., 2009)

The purpose of the study was also to find out how health behaviour practices are influenced by risk perception and what all factors are associated with risk perception. The sociodemographic profile of the participants reflects a literate population with varying economic backgrounds and increased health consciousness. The age of the study participants ranged from 21 to 55 years, with a mean age of 41.4 years (SD = 8.9). Majority (75.4%) were females, and 24.6% were males. The majority were married (85.5%), while 3.3 percent were living either separated or widowed and over one tenth (11.2%) were unmarried. All participants had a graduate degree and 34.5 percent holding a postgraduate graduate degree and having a mean teaching experience of 13.9 years (SD = 9.7).The mean annual household income was around 4.52 lakhs (SD=3 lakhs) The majority of the participants had at least one health insurance plan (82.2%), either government (68.7%), private (4.5%), or both (10.7%).

The prevalence of CVD risk factors were assessed and found to be lesser compared to the general population. This finding was similar to that obtained in a study done among the school teachers in France.(Gilbert et al., 2015).

Only a few participants reported smoking (0.2%) and alcohol consumption (2%). NFHS 5 district wise data shows that in Kannur women and men aged above 15 years, consuming alcohol were found to be 0.1% and 14.1% respectively and 1.7% women and 12% of men use tobacco. Social status of school teachers could be a reason for response bias which may be also contributed in reduced prevalence.

More than half (54.2%) of the study population's engagement in physical activities was reported to be poor. Nearly half of the study participants (48.1%) followed a diet of good quality, they were reported to have better DASH diet adherence. Weight management practices were found to be poor among half of the participants (51%).

When health behaviours of different socioeconomic strata among the study population were compared no significant result were obtained except for income status. The trend of good health behaviour practices among the participants were found within the female sex, younger age group and participants with more than one health insurance. A higher income status was significantly associated with good practice of health behaviour. A study which looked at the education gradient in terms of income reported the same results of having better health behaviour with high income status. (Cutler and Lleras-Muney, 2010)

Prevalence of hypertension was found to be 20 percent among the population similar to the results found in another study conducted in Kannur district among cotton textile workers reported a prevalence of 22.3%(Ismail, n.d.). In a 2014 study where it was reported that prevalence of hypertension among rural south Indian population is 21.1% (20.1–22.0).(Anchala et al., 2014) while a 2019 study reported an overall prevalence of

39.7% and among women 23.7% were hypertensive.(Ramakrishnan et al., 2019) 11.6 percent of the participants were diabetic which was lesser compared to a pooled systematic review which reported that prevalence of diabetes is 15 to 19 percent among Indians.(Ranasinghe et al., 2021)

While prevalence of dyslipidemia was found to be 36.6 percent. Proportion of individuals with a high BMI was higher among the population, 22.6 percent were overweight and 51.7 percent were obese. 32.8 percent among the study population were having multiple morbidities. Varicose veins reported by teachers could be related to their occupation. A family history of premature CVD was reported by 17.1 percent of the population.

The study measured the prevalence of knowledge, risk perception, perceived benefits and intention to change behaviours using the ABCD risk scale. These factors are considered to be the cognitive and psychological determinants in the primary prevention of CVD. From the current study all these factors were found to be significantly associated with health behaviour practices. The role of perceived benefits and intentions for action in promoting lifestyle changes has been explained by several theories in psychology **.**(Leung, 2013)

Minimum score obtained for knowledge regarding the risk factors of CVD was five out of ten and, the most incorrect answers or non-response were regarding the questions about the risk of having a family history of CVD, followed by the knowledge about excess alcohol consumption leading to increase in cholesterol levels.

Study done by Bee chiu Lim found that there is a significant association between knowledge and health behaviours. Knowledge acts as a mediator in improving the perceived benefits for health behaviour promotion. (Lim et al., 2021)The results in the

current study shows, the association between knowledge and health behaviour found, was not significant (p value=0.19) among the study population. This may be because the knowledge level was higher among the population compared to the general population. The two categories compared, did not differ to a large extent in their knowledge levels.

The prevalence of risk perception found is such that 51.4 percent had low levels of risk perception and percent 48.6 had high levels of CVD risk perception. In a study done in south China, the risk perception group was categorised into three, reporting majority were included in moderate level risk perception category.(Guo et al., 2023)Several studies had highlighted the importance of improving risk perception among the high risk. (Webster and Heeley, 2010)But there were no studies in community settings which reported the association of high risk perception and poor behaviours. The current study shows that compared to individuals with a high level of risk perception, those with a low level of risk perception were found to be 2.32 (95% CI 1.40 -3.82) times more likely to engage in health behaviour practices when adjusted for other variables. Nearly 60 percent of individuals with high risk perception were found to have poor diet quality (59.7%), poor engagement in physical activity (59.7%), and poor practice of weight management (57.4%).

It was found that multimorbidity as well as family history of CVD are associated with high risk perception levels. The study results says those with a family history of premature CVD are 2.25 times more likely to develop a high risk perception than those without A study done to assess the relation between family history, risk perception and health behaviours showed that family history of CVD and perceived risk had a favourable correlation, while A FH of CVD, a change in health-related behaviour, a perception of

risk, and a change in behaviour, however, did not always correlate with one another. (Imes and Lewis, 2014)

From further analysis it was found that risk perception was influenced by other psychological factors such as neuroticism and perceived self efficacy. Individuals high in neuroticism were 1.9 times more likely to develop a high risk perception than those with low neuroticism. Individuals with low perceived self efficacy for diet are 2.68 times more likely to perceive a higher risk for CVD compared to those with high perceived self efficacy for diet.

Studies have reported that high neuroticism is associated with CVD risk. (SAysha almas). According to the result of study done by Thøgersen-Ntoumani et al., 2022), high levels of neuroticism in middle age may hinder engagement in PA and consumption of fruit/vegetable behaviours. Rather than risk perception assessment alone, self-regulation or action self efficacy is important tool suggested by the study to measure physical activity and vice versa, individuals high in neuroticism perceive themselves at greater risk of disease. Study suggests future interventions using mindfulness and the unified protocol targeting people with high levels of neuroticism.(Hutchinson and Ruiz, 2011)

It was well explained in psychological researches that numerous psychopathological and physical health care issues are impacted by neuroticism, a core personality trait with significant public health implications. It makes many gravely negative life outcomes more likely to occur and makes it harder for people to deal with them effectively. It is increasingly acknowledged as a core domain of personality disorder and psychopathology in general. It has long been acknowledged as one of the more major and significant domains of personality.(Widiger and Oltmanns, 2017).

Similarly low perceived self efficacy was proved to be detrimental to health behaviour practice by other studies as well. (Lee et al., 2008) (Castillo-Mayén et al., 2020) (Warner and Schwarzer, 2020)

Various studies have measured and interpreted the variables associated with health behaviours in different manners. Current study reveals that the development of high levels of risk perception is influenced by psychological risk factors such as high neuroticism and low perceived self efficacy and this may be in turn leading to the poor follow up of health behaviour practices.

The study tried to understand the level of risk perception for CVD among the school teacher population by comparing with the actual risk in order to measure to what extent the mismatch exists between the actual and perceived CVD risk. The actual risk faced by the study population for getting a CVD like heart attack or stroke in the next ten years was calculated based on WHO CVD risk chart. Risk assessment as per the chart involved applying the smoking status, sex category, age category, body mass index category and systolic blood pressure category to get the individual values for actual risk. It was found that 48.6 percent of the population have a mismatched risk perception, either they underestimated (21.1) or overestimated (27.5) their risk. Compared to other studies, among this study population over estimation was found to be lesser. It may be due to the education and not very poor economic status of the population. Previous studies reported a risk over estimation ranging from 39 to 72.2 percent. Similar results were reported by the study conducted among the south Chinese population. But, this study had an approach that only underestimation is detrimental compared to accurate and over estimation. The study looked only on the underestimated category compared to the rest. Underestimation can be dangerous as it leads to ignorance of preventive measures.

From the current study it can be concluded that overestimation or high levels of risk perception can be harmful because it implicates the prevalence of other psychological risk factors which together can negatively impact health behaviour practices. Future research should continue to explore the dynamics between risk perception and health behaviours to develop effective strategies for CVD prevention

Strengths

This is a community based study aimed at exploring the association between risk perception and health behaviour practice, such studies are very minimal in Indian settings, which looks for community based approach in prevention of CVD.

Limitations

The findings of this study has to be interpreted by taking account of its limitations

The study assessed health behavioural practice measurements which were based on self reported data, and can be subjected to response bias and recall biases. We assessed mismatch in risk perception using a comprehensive technique that included lifetime and 10-year risks, as opposed to objective CVD risk computation that was only followed by 10-year risks. Being a cross sectional study, the results cannot be used to infer causal relationships.

Conclusion and Recommendations

The study revealed significant disparities between the actual risk for CVD and the participants' perception of their risk. Nearly half (48.6%) (95% CI: 43.7- 53.4) of the study population was found to have mismatched risk perception. While, mean 10 year CVD risk among the population was 2.6% (SD=1.6),
participants' perceived risk was notably higher at 53.3% (25-87.5%). Smoking (0.2%) and alcohol consumption (2%) were relatively uncommon behaviors among the school teachers in the study. However, more than half of the participants exhibited poor practices of engagement in physical activity (54.2%), diet quality (51.9%), and adherence to weight management (51%). Interestingly, a considerable proportion (23.3%) of the participants displayed poor practices in all three assessed health behaviors. The health behaviour practices assessed were significantly associated with psychological factors such as risk perception, perceived benefits and intention to change behaviour
Further analysis demonstrated a negative correlation between risk perception and health behaviours. Individuals with high levels of risk perception were having poor practice health behaviours (aOR=2.32, 95% CI: 1.40-3.82, p value=0.001**). Such individuals were found to have significantly low perceived self efficacy and high levels of neuroticism. Individuals having high levels of perceived benefits and intentions to change behaviours were found to be around twice better in their practice of health behaviours compared to others.

The primary prevention of CVD through health behaviour promotion should take these factors into consideration. Future studies that collaborate researchers in the fields of

psychology and cardiovascular diseases are needed for building the foundation for school-based or community based primary prevention of CVD through behaviour modification.

School health policies focused on providing training for the teachers, developing a school curriculum that incorporates health behaviour promotion can benefit the primary prevention of CVD. This can include programs that that incorporates physical activity and nutrition component, interventions for risk communication which consider individuals' risk perception, self-efficacy levels and neurotic tendencies could lead to more effective behaviour change programs. Group sessions on mindfulness practice, training for challenging the negative thought patterns, providing access to coaching or counselling sessions in schools which can support behaviour modification can contribute the solutions for the same.

It's worth mentioning that the school teachers in the study exhibited a commendable level of knowledge about cardiovascular disease risk factors, along with that, the prevalence of smoking and alcoholism were very minimal, making them suitable as role models for the society.

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INFORMATION SHEET

Study topic : Assessment of cardiovascular disease risk and risk perception among school teachers in a northern Kerala district

I am Dr Sruthi O, final year student doing my post-graduation in Master of Public Health (MPH) at Achutha Menon Centre for Health Science Studies under Sree Chitra Tirunal Institute for Medical Science and Technology, Thiruvananthapuram. As part of my thesis 'Assessment of cardiovascular disease risk perception among school teachers in a northern district of Kerala', I am here to interview school teachers of Kannur educational districts.

I am doing my study in randomly selected government and aided schools in the district. Your school is one among them. I have randomly selected teachers from these selected institutions. I will be asking you some questions about the risk perception, knowledge, perceived benefits and intentions to change as well as the self-care practices regarding cardio vascular health. The duration of the interview will be 20-30 minutes. The height, weight, blood pressure and other available data such as presence of any morbidity, blood cholesterol level from doctors' prescriptions and lab reports will be recorded.

The participation in the study is purely voluntary. You can take your time to answer the questions. You are free to withdraw from the study any time during the interview even after giving consent. You can ask me for clarification about the information given in this sheet.

Though you will not be directly benefited from the study, the information you share may be useful in developing policies that support the general public and in school health policy making for the prevention of cardio vascular diseases. It is unlikely that this study will cause any other significant harm, except that some questions may cause you discomfort.

I ensure you that any information shared by you will be strictly confidential and only a summary of what you gave will be used for research and publication purposes. The report will not contain your name or the name of the institution.

For any clarification regarding the study, you can contact me and for any queries on the authentication of this study, you can contact the Member Secretary, Institutional Ethics Committee (IEC) of SCTIMST.

Contact information

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അച്യുതമേനോൻ സെന്ററർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസ്
ശ്രീ ചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ്
ആൻഡ് ടെക്നോളജി, തിരുവനന്തപുരം – 11

പഠനവിഷയം: വടക്കൻ കേരളത്തിലെ ജില്ലയിലെ സ്കൂൾ അധ്യാപകർക്കിടയിൽ ഹൃദ്-രോഗസാധ്യതയും അതിന്റെ ധാരണകളും വിലയിരുത്തൽ.

<u>അഭിമുഖത്തിന് മുൻപുള്ള വിവരപ്പട്ടിക.</u>

നമസ്കാരം! ഞാൻ ഡോ.ശ്രുതി.ഒ. തിരുവനന്തപുരം ശ്രീചിത്ര തിരുനാൾ ഇൻസ്റ്റിട്ട്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിക്ക് കീഴിലുള്ള അച്യുത മേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിൽ പൊതുജനാരോഗ്യത്തിൽ (മാസ്റ്റേഴ്സ് ഓഫ് പബ്ലിക് ഹെൽത്ത്) അവസാന വർഷ പിജി വിദ്യാർഥിനിയാണ്. 'വടക്കൻ കേരളത്തിലെ ജില്ലയിലെ സ്കൂൾ അധ്യാപകർക്കിടയിൽ ഹൃദ്-രോഗസാധ്യതാ ധാരണ വിലയിരുത്തൽ' എന്ന എന്റെ ഗവേഷണ വിഷയവുമായി ബന്ധപ്പെട്ടു ധാരണ കണ്ണൂർ വിദ്യാഭ്യാസജില്ലയിലെ സ്കൂൾ അധ്യാപകരുമായി അഭിമുഖം നടത്താനാണ് ഇവിടെ വന്നിട്ടുള്ളത്.

ജില്ലയിലെ ക്രമരഹിതമായി തിരഞ്ഞെടുത്ത സർക്കാർ, എയ്ഡഡ് സ്കൂളുകളിലാണ് ഞാൻ പഠനം നടത്തുന്നത്. നിങ്ങളുടെ സ്കൂൾ അതിലൊന്നാണ്. ഈ തിരഞ്ഞെടുത്ത സ്ഥാപനങ്ങളിൽ നിന്ന് ഞാൻ ക്രമരഹിതമായി അധ്യാപകരെ തിരഞ്ഞെടുത്തു. ഹൃദ്-രോഗസാധ്യതയുടെ

ധാരണയെക്കുറിച്ചും, സ്വയം പരിചരണങ്ങളെ കുറിച്ചും ആണ് ഞാൻ അധ്യാപകരോട് ചോദിക്കാൻ ഉദ്ദേശിക്കുന്നത്. നിങ്ങളുടെ നീളം,ഭാരം, രക്ത സമ്മർദ്ദം എന്നിവ അളക്കുകയും , മറ്റേതെങ്കിലും രോഗാവസ്ഥകൾ, ,കൊളസ്ട്രോൾ എന്നീ വിവരങ്ങൾ ഈയിടെ ഉള്ള ഡോക്ടറുടെ കുറിപ്പടികൾ, ലാബ് റിപ്പോർട്ട്കൾ , ഇവ വച്ച് റെക്കോർഡ് ചെയ്യേണ്ടതുമുണ്ട്. ഈ അഭിമുഖത്തിന്റെ ദൈർഘ്യം **20-30** മിനിറ്റായിരിക്കും.

ഈ പഠനത്തിലെ പങ്കാളിത്തം തീർത്തും സ്വന്തം തീരുമാനപ്രകാരമായിരിക്കും. ചോദ്യങ്ങൾക്ക് ഉത്തരം നൽകാൻ നിങ്ങൾക്ക് നിങ്ങളുടെ സമയം എടുക്കാം. സമ്മതം നൽകിയ ശേഷം പോലും ആവശ്യമെങ്കിൽ ഈ പഠനത്തിൽ നിന്നും പിന്മാറാൻ നിങ്ങൾക്ക് സ്വാതന്ത്രമുണ്ട്. ഈ സമ്മത പത്രത്തിൽ ഏതെങ്കിലും കാര്യം മനസിലാവാതെ ഉണ്ടെങ്കിൽ തങ്ങൾക്ക് എന്നോട് ചോദിക്കാവുന്നതാണ്.
ഈ പഠനത്തിൽ നിന്നും നിങ്ങൾക്ക് നേരിട്ട് ഗുണങ്ങളൊന്നും ഉണ്ടാകാൻ സാധ്യതയില്ലെങ്കിൽ പോലും, നിങ്ങൾ പങ്കിടുന്ന വിവരങ്ങൾ ഹൃദ്രോഗങ്ങളെ ചെറുക്കാൻ വേണ്ടിയുള്ള പൊതു ജനങ്ങളെ പിന്തുണയ്ക്കുന്ന നയങ്ങൾ വികസിപ്പിക്കാനും സ്കൂൾ ഹെൽത്ത് പോളിസി നിർമ്മാണത്തിലും ഉപയോഗപ്രദമായേക്കാം. ചില ചോദ്യങ്ങൾ നിങ്ങൾക്ക് അസ്വസ്ഥത ജനിപ്പിച്ചേക്കാം എന്നതൊഴിച്ചാൽ മറ്റ് സാരമായ ദോഷങ്ങളൊന്നും തന്നെ ഈ പഠനം കൊണ്ട് ഉണ്ടാകാൻ സാധ്യതയില്ല.

നിങ്ങൾ പങ്ക് വെക്കുന്ന വിവരങ്ങളുടെ സ്വകാര്യത സംരക്ഷിക്കപ്പെടുമെന്നും അതിന്റെ ഒരു സംഗ്രഹം മാത്രമാണ് പഠനാവശ്യത്തിനും പ്രസിദ്ധീകരണത്തിനും ഉപയോഗിക്കുക എന്നും ഞാൻ നിങ്ങൾക്കുറപ്പ് തരുന്നു. നിങ്ങളുടെയോ നിങ്ങളുടെ സ്ഥാപനത്തിന്റെയോ പേര് റിപ്പോർട്ടിൽ ഉണ്ടായിരിക്കുന്നതല്ല.

കൂടുതൽ വിശദാംശങ്ങൾ ആവശ്യമുണ്ടെങ്കിൽ നിങ്ങൾക്ക് എന്നെയോ ഈ പഠനത്തിന്റെ അംഗീകാരം സംബന്ധിച്ചുള്ള വിവരങ്ങൾക്ക് ശ്രീചിത്രയുടെ ഇൻസ്റ്റിറ്റ്യൂഷണൽ എത്തിക്സ് കമ്മിറ്റിയുടെ മെമ്പർ സെക്രട്ടറിയെയോ നിങ്ങൾക്ക് ബന്ധപ്പെടാവുന്നതാണ്.

ബന്ധപ്പെടാനുള്ള വിവരങ്ങൾ

പ്രധാന ഗവേഷക,
ഡോ.ശ്രുതി.ഒ
എം.പി.എച്ച്. 2021,
എ.എം.സി.എച്ച്.എസ്.എസ്.
എസ് സി ടി ഐ എം എസ് ടി
തിരുവനന്തപുരം
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ഇ-മെയില് :

മെമ്പർ സെക്രട്ടറി
ഇൻസ്റ്റിറ്റ്യൂഷണൽ റിവ്യൂ ബോർഡ്
എസ് സി ടി ഐ എം എസ് ടി
തിരുവനന്തപുരം
ഓഫീസ്: 0471-2524689
ഇ-മെയില്: iec.mem.sec@sctimst.ac.in

Achutha Menon Centre for Health Science Studies (AMCHSS)

Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST)

Trivandrum -11

Study topic: Assessment of cardiovascular disease risk and risk perception among school teachers in a northern district of Kerala

INFORMED CONSENT FORM

I, …… have read and understood all the information provided in the information sheet.

I understand that my participation in this study is purely voluntary.

By signing this sheet, I confirm my voluntary participation in this study.

I understand that I can withdraw from this study during the interview without any explanation.

I get that my identity and personal information will be kept confidential.

I have been informed whom to be contacted for further information

I agree to take part in this study.

Name of the participant.

Signature.

Thumb Impression (if unable to sign):

Date

അച്യുതമേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസ്
ശ്രീ ചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ്
ആൻഡ് ടെക്നോളജി, തിരുവനന്തപുരം – 11

പഠനവിഷയം:വടക്കൻ കേരളത്തിലെ ജില്ലയിലെ സ്കൂൾ അധ്യാപകർക്കിടയിൽ ഹൃദ്-രോഗസാധ്യതയും അതിന്റെ ധാരണകളും വിലയിരുത്തൽ.

വിവരമറിയിച്ചുകൊണ്ടുള്ള സമ്മത പത്രം

- ഞാൻ, ... വിവരപ്പട്ടിക വായിക്കുകയും പൂർണമായും ബോധ്യപ്പെടുകയും ചെയ്തിട്ടുണ്ട്.
- ഈ പഠനത്തിൽ ഉള്ള എന്റെ പങ്കാളിത്തം പൂർണമായും സ്വന്തം ഇഷ്ടപ്രകാരമാണെന്ന് ഞാൻ മനസ്സിലാക്കുന്നു.
- ഈ ഷീറ്റിൽ ഒപ്പിടുന്നത് വഴി ഈ പഠനത്തിൽ എന്റെ പങ്കാളിത്തം ഞാൻ വ്യക്തമാക്കുന്നു.
- യാതൊരു വിശദീകരണവും കൂടാതെ ഈ അഭിമുഖത്തിനിടക്ക് എനിക്ക് ഇതിൽ നിന്നും പിന്മാറാം എന്ന് ഞാൻ മനസ്സിലാക്കുന്നു.
- എന്റെ വ്യക്തിപരമായ വിശദാംശങ്ങളും സ്വകാര്യവിവരങ്ങളും രഹസ്യമായി സൂക്ഷിക്കപ്പെടുമെന്ന് ഞാൻ മനസ്സിലാക്കുന്നു.
- കൂടുതൽ വിവരങ്ങൾക്കായി ആരുമായി ബന്ധപ്പെടണം എന്ന് എനിക്ക് വിശദമാക്കി തന്നിട്ടുണ്ട്.
- ഈ പഠനത്തിൽ പങ്കെടുക്കാൻ ഞാൻ തയ്യാറാണ്.

പങ്കെടുക്കുന്ന വ്യക്തിയുടെ പേര്
ഒപ്പ്
വിരലടയാളം (ഒപ്പിടാൻ കഴിയുന്നില്ലെങ്കിൽ)):

തീയതി

Assessment of cardiovascular disease risk and risk perception among school teachers in a northern district of Kerala

INTERVIEW SCHEDULE

Participant ID number	
Section 1	**Sociodemographic details**
1.Completed age in years	
2.Sex	0= Male 1= Female
3. What is your current marital status?	Never married =1 Currently married= 2 Separated= 3 Divorced =4 Widowed= 5 Refused =88
4. Up to what level have you studied?	0=Graduation/College completed 1=Postgraduation completed
5.Annual household income (in Indian Rupees)?	
6.Do you have any health insurance, type of insurance?	0=No health insurance 1=Government health insurance 2=Private health insurance

7.Years of experience in teaching in years		
Section 2a)	**Cardiovascular Risk perception**	
8. Select a score from 0 -100 that represents what you think is your chance of having a heart attack or stroke over the next 10 years.		
Section 2b) **Attitudes and Beliefs About Cardiovascular Disease**		
Perceived Risk of Heart Attack / Stroke scale **State your agreement for following statements**	9. I feel I will suffer from a heart attack or stroke sometime during my life.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0
	10. It is likely that I will suffer from a heart attack or stroke in the future.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0
	11. It is likely that I will have a heart attack or stroke some time during my life.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0

	12. There is a good chance I will experience a heart attac k or stroke in the next 10 years.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0
	13. My chances of suffering from a heart attack or stroke in the next 10 years are great.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0
	14. It is likely that I will have a heart attack or stroke bec ause of my past and/or present behaviors.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0
	15. I am not worried that I might have a heart attack or str oke.	Reverse cod ed 4=Strongly disagree; 3=disagree; 2=agree; 1=strongly a gree; N/A=0
	16. I am concerned about the likelihood of having a heart attack or stroke in the near future.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly a gree; N/A=0
Knowledge scale	17.One of the main causes of heart attack and stroke is str ess.	T=1 F=0

State whether the statement is true or false Correct: Score=1 Incorrect or Don't Know: Score=0	18. Walking and gardening are considered types of exercise that can lower the risk of having a heart attack or stroke.	T=1 F=0
	19.Moderately intense activity of 2 ½ hours a week will reduce your chances of having a heart attack or stroke.	T=1 F=0
	20. People who have diabetes are at higher risk of having a heart attack or stroke.	T=1 F=0
	21. Managing your stress levels will help you to manage your blood pressure.	T=1 F=0
	22. Drinking high levels of alcohol can increase your cholesterol and triglyceride levels.	T=1 F=0
	23. A family history of heart disease is not a risk factor for high blood pressure.	F=1 T=0
	24. People who smoke are at risk of having a heart attack or stroke.	T=1 F=0
	25. Having enough sleep (7-8 hours per day) will help you lower your risk of having a heart attack or stroke".	T=1 F=0
26.	People of age from 20 years to 50years old are not at risk of heart attack or stroke	F=1 T=0
Perceived Benefits and Intentions to Change	27. I am thinking about exercising at least 2½ hours a week.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0
	28. I intend or want to exercise at least 2½ hours a week.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly agree; N/A=0
	29. When I exercise for at least 2½ hours a week I am doing something good for the health of my heart.	1=Strongly disagree;

		2=disagree; 3=agree; 4=strongly a gree; N/A=0
	30. I am confident that I can maintain a healthy weight by exercising at least 2½ hours a week within the next two months.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly a gree; N/A=0
	31. I am not thinking about exercising for 2 ½ hours a we ek.	Reverse cod ed 4=Strongly disagree; 3=disagree; 2=agree; 1=strongly a gree; N/A=0
	32. When I eat at least five portions of fruit and vegetable s a day I am doing something good for the health of my h eart.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly a gree; N/A=0
	33. Increasing my exercise to at least 2½ hours a week wi ll decrease my chances of having a heart attack or stroke.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly a gree; N/A=0
(Healthy E ating Intentions)	34. I am confident that I can eat at least five portions of fr uit and vegetables per day within the next two months.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly a gree; N/A=0

	35. I am thinking about eating at least five portions of fru it and vegetables a day.	1=Strongly disagree; 2=disagree; 3=agree; 4=strongly a gree; N/A=0
	36.I am not thinking about eating at least five portions of fruit and vegetables a day.	Reverse cod ed 4=Strongly disagree; 3=disagree; 2=agree; 1=strongly a gree; N/A=0
Section 3. Perceived Self-efficacy **The Following section is about asking how e**xtent you believe in yourself to reduce the cardiovascular risk		
1 The Nutrit ion Self-Eff icacy Scale The extent y ou believe i n yourself t o eat a healt hy diet to pr event heart attack or str oke	37. How certain are you that you could overcome the following barriers?" **I can manage to stick to healthy foods...** 1 ...even if I need a long time to develop the necessary routines. 2 ...even if I have to try several times until it works. 3 ...even if I have to rethink my entire way of nutrition, avoid some of my favorite food items 4 ...even if I do not receive a great deal of support from others when making my first attempts. 5 ...even if I have to make a detailed plan.	**1=Very uncertain 2= rather uncertain 3= Rather certain 4=Very certain N/A=0**
2.The Physi cal Exercise	38. "How certain are you that you could overcome the following barriers?"	**1=Very uncertain**

Self-Efficacy Scale The extent you believe in yourself to maintain suitable body weight by doing regular physical activity to prevent heart attack or stroke.	**I can manage to carry out my exercise intentions, ...** 1 ...even when I have worries and problems. 2 ...even if I feel depressed. 3 ...even when I am tired. 4...even when I am busy.	**2= rather uncertain** **3= Rather certain** **4=Very certain** **N/A=0**
The Alcohol Resistance Self-Efficacy Scale	39. I am certain that I can control myself to... 1 ...reduce my alcohol consumption. 2 ...not to drink any alcohol at all. 3 ...drink only at special occasions	**1=Very uncertain** **2= rather uncertain** **3= Rather certain** **4=Very certain** **N/A=0**
4.a) Morbidities	40.Do you have any of the following conditions diagnosed?	**YES=1** **NO=0**
	1. Hypertension	Yes=1 No = 0
	2. Dyslipidemia	Yes=1 No = 0
	3. Diabetes	Yes=1 No = 0
	4. CKD	Yes=1 No = 0
	5. COPD/Asthma	Yes=1 No = 0

	6. Arthritis/ Musculoskeletal disorders	Yes=1 No = 0
	7. Anemia	Yes=1 No = 0
	8. Thyroid	Yes=1 No = 0
	9. Others (Please specify)	
4.b) Family history	41. Do you have family history of premature CHD or stroke in first degree relative (male < 55 years, female < 65 years)	YES=1 NO=0
Section 5 selfcare practices		
1.Monitoring of BP, blood sugar and cholesterol	42.Do you have BP apparatus in your home?	1= Yes 0= No (Skip Qn 43)
	43.If yes, Frequency of BP monitoring: On an average how many times did you monitor your BP per month?	
	44.If not, how often do you get your blood pressure checked from any health care center?	1=Once a month 2=Once in three months 3=Once in six months 4=Once a year 5=When symptoms occur
	45.Do you have blood glucose measuring apparatus in your home?	1= Yes 2 = No
	46.If yes, Frequency of Blood glucose monitoring: On an average how many times did you monitor your blood glucose per month?	
	47.If not, how often do you get your Blood sugar checked from any health care center?	1=Once a month 2=Once in

		three months 3=Once in six months 4=Once a year 5=When symptoms occur
	48.How often do you get your Blood cholesterol checked from any health care center?	1=Once a month 2=Once in three months 3=Once in six months 4=Once a year 5=When symptoms occur
Adapted H-SCALE (Hypertension Self-Care Activity Level Effects Scale)		
Medication Usage:	**How many of the past 7 days did you**	
	49.Take recommended number of your blood pressure pills?	0 1 2 3 4 5 6 7 99= I have not been prescribed blood pressure pills.
	50.Take recommended number of your Diabetes pills?	0 1 2 3 4 5 6 7 ¨ 99=I have not been prescribed

		diabetes pills.
	51.Take recommended number of your Cholesterol pills?	0 1 2 3 4 5 6 7 99= I have not been prescribed cholesterol pills.
Diet (DASH-Q scale)	How many of the past 7 days did you	
	52.Eat nuts like plain peanuts and cashew nuts?	0 1 2 3 4 5 6 7
	53.Eat legumes like kidney beans, chickpeas, green gram and lentils?	0 1 2 3 4 5 6 7
	54.Eat eggs?	0 1 2 3 4 5 6 7
	55.Eat high salt foods (pickles, pappad and dry fish)?	0 1 2 3 4 5 6 7
	56.Eat five or more servings of fruits and vegetables?	0 1 2 3 4 5 6 7
	57.Eat more than one serving of fruits?	0 1 2 3 4 5 6 7
	58.Eat more than one serving of vegetables?	0 1 2 3 4 5 6 7
	59.Drink milk (in a glass, with coffee or tea)?	0 1 2 3 4 5 6 7
	60.Eat cabbage, spinach, cauliflower?	0 1 2 3 4 5 6 7
	61.Eat apples, bananas, oranges, melon or raisins?	0 1 2 3 4 5 6 7
	62.Eat hand-pounded raw rice, cereals, wheat, wheat flour?	0 1 2 3 4 5 6 7
Physical Activity	How many of the past 7 days did you:	
	63.a) Do at least 30 minutes total of physical activity? Moderate activities: home maintenance, cooking, washing clothes, maintenance of cattle, fetching water, carrying wood,	0 1 2 3 4 5 6 7

	others Vigorous activities: Agricultural work, Digging, Breaking stone, bicycle, carpentry work/ masonry work, others	
	64.b) Do a specific exercise activity (such as swimming, walking, or biking) other than what you do around the house or as part of your work?	0 1 2 3 4 5 6 7
Weight management In order to lose weight or maintain my weight.	**The following questions ask about your efforts to manage your weight during the last 30 days. If you were sick during the past month, please think back to the previous month that you were not sick.** **Report the one answer that best describes what you do to lose weight or maintain your weight.**	**Strongly Disagree=1, Disagree=2, not Sure=3, Agree=4, Strongly Agree=5.**
	65.I am careful about what I eat.	1 2 3 4 5
	66.I read food labels when I buy food from grocery shop.	1 2 3 4 5
	67.I exercise in order to lose or maintain weight.	1 2 3 4 5
	68.I eat smaller portions or eat fewer portions.	1 2 3 4 5
	69.I have stopped buying or bringing unhealthy foods into my home.	1 2 3 4 5
	70.I substitute healthier foods for things that I used to eat.	1 2 3 4 5
	71.a. I have cut out drinking sugary sodas and sweet tea	1 2 3 4 5
	71.b. I have cut out or limit some foods that I like but that are not good for me.	1 2 3 4 5
	72.I eat at restaurants or fast-food places less often.	1 2 3 4 5
	73.I have modified my recipes when I cook.	1 2 3 4 5
Smoking	74.**Smoking status:** Smoker (All current smokers and those who quit smoking less than 1 year before the assessment) = 1	

	Non-smoker (never smoke/ not smoking more than one year of assessment) = 0 (skip question 75)	
	How many of the past 7 days did you? 75. a) Smoke a cigarette, beedi, cigar or hookah, even just one puff?	1 2 3 4 5 6 7
	b) During the past 12 months, have you tried to stop smoking?	YES=1 NO=0
	76. Stay in a room or ride in an enclosed vehicle while someone was smoking?	1 2 3 4 5 6 7
	The next three questions are about alcohol consumption. A drink of alcohol is defined as: • 250 ml of beer. • 100 ml of wine. • 30 ml distilled spirits or liquor (e.g., gin, rum, vodka, or whiskey).	
	77.Alcohol consumption Yes (consumed any alcohol within the past 30 days) = 1 No (did not drink alcohol at all.) = 0	Yes=1 No=0(skip Qn.78)
	78. a) On average, how many days per week do you drink alcohol? 1 2 3 4 5 6 7	
	b) On a typical day that you drink alcohol, how many drinks do you have?	
	c) What is the largest number of drinks that you have had on any given day within the last month?	

<table>
<tr>
<td>Section 6 Physical and biochemical measurements</td>
<td>79.Height in meter

80.Weight in Kg

81.BP
<table>
<tr><td>Items</td><td>First measurement</td><td>Second measurement</td><td>Third measurer</td></tr>
<tr><td>SBP</td><td></td><td></td><td></td></tr>
<tr><td>DBP</td><td></td><td></td><td></td></tr>
</table>
82.Total cholesterol (in mmol/l)

83.FBS(mg/dl)</td>
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ഇന്റർവ്യൂ ഷെഡ്യൂൾ

I D നമ്പർ:	
വിഭാഗം 1	സോഷ്യോഡെമോഗ്രാഫിക് വിശദാംശങ്ങൾ
1. പൂർത്തിയായ പ്രായം **(**വർഷങ്ങളിൽ**)**	
2. ലിംഗം	0 = പുരുഷൻ 1 = സ്ത്രീ
3. നിങ്ങളുടെ നിലവിലെ വൈവാഹിക നില എന്താണ്?	വിവാഹം കഴിക്കാത്തവർ = **1** നിലവിൽ വിവാഹിതർ = **2** വേർപിരിഞ്ഞവർ/വിവാഹമോചനം = **3** ഭർത്താവ്/ ഭാര്യമരിച്ചത് = **4 N/A= 99**
4. നിങ്ങൾ ഏത് തലം വരെ പഠിച്ചു?	**1**= ബിരുദം / കോളേജ് പൂർത്തിയായി **2**= ബിരുദാനന്തര ബിരുദം പൂർത്തിയായി
5. വാർഷിക കുടുംബ വരുമാനം (ഇന്ത്യൻ	

രൂപയിൽ)?	
6.നിങ്ങൾക്ക് എന്തെങ്കിലും ആരോഗ്യ ഇൻഷുറൻസ് ഉണ്ടോ ഉണ്ടെങ്കിൽ ഏതു തരം ഇൻഷുറൻസ് ആണ് ഉള്ളത്?	0= ആരോഗ്യ ഇൻഷുറൻസ് ഇല്ല 1= സർക്കാർ ആരോഗ്യ ഇൻഷുറൻസ് 2= സ്വകാര്യ ആരോഗ്യ ഇൻഷുറൻസ് **3**== സർക്കാർ, സ്വകാര്യ ആരോഗ്യ ഇൻഷുറൻസ്
7. അധ്യാപനത്തിൽ എത്ര വർഷങ്ങളുടെ പരിചയം ഉണ്ട്?	
വിഭാഗം 2	ഹൃദ്രോഗത്തിനുള്ള അപകട സാധ്യത ധാരണകൾ വിലയിരുത്തൽ

8. താങ്കൾക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാനു സാധ്യത എത്രത്തോളം വരുമെന്ന് ചിന്തിക്കുക. അടുത്ത **10** വർഷത്തിനുള്ളിൽ താങ്കൾക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാനുള്ള സാധ്യതയെ പ്രതിനിധീകരിക്കുന്ന ഒരു സ്കോർ **0 -100** ൽ നിന്ന് തിരഞ്ഞെടുക്കുക.		
ഇനിപ്പറയുന്ന പ്രസ്താവനകളോട് എത്രത്തോളം യോജിക്കുന്നുണ്ടെന്ന് പറയുക.		
	9) എന്റെ ജീവിതത്തിൽ എപ്പോഴെങ്കിലും എനിക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ അനുഭവപ്പെടുമെന്ന് എനിക്ക് തോന്നുന്നു	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= യോജിക്കുന്നു 4= ശക്തമായ് യോജിക്കുന്നു; N/A=0
	10. സമീപ ഭാവിയിൽ എനിക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാൻ സാധ്യതയുണ്ട്.	1=ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായ് യോജിക്കുന്നു; N/A=0
	11. എന്റെ ജീവിതത്തിൽ എപ്പോഴെങ്കിലും എനിക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാൻ ഉള്ള സാധ്യതയുണ്ട്	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു;

		3= സമ്മതിക്കുന്നു; 4= ശക്തമായ് യോജിക്കുന്നു; N/A=0
	12. അടുത്ത പത്ത് വർഷത്തിനുള്ളിൽ എനിക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ അനുഭവപ്പെടാൻ സാധ്യത ഉണ്ട്	1=ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായ് യോജിക്കുന്നു; N/A=0
	13. അടുത്ത പത്ത് വർഷത്തിനുള്ളിൽ എനിക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാൻ ഉള്ള സാധ്യത വളരെ കൂടുതലാണ് .	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായ് യോജിക്കുന്നു; N/A=0
	14. എന്റെ പഴയകാല ശീലങ്ങൾ കാരണവും ഇപ്പോൾ നിലവിലുള്ള ശീലങ്ങൾ കാരണവും എനിക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാൻ സാധ്യത ഉണ്ട്.	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായ് യോജിക്കുന്നു; N/A=0

	15. എനിക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകുമെന്ന് ഞാൻ ആശങ്കപ്പെടുന്നില്ല	റിവേഴ്സ് കോഡ് 4= ശക്തമായ് വിയോജിക്കുന്നു; 3= വിയോജിക്കുന്നു; 2= സമ്മതിക്കുന്നു; 1= ശക്തമായി യോജിക്കുന്നു; N/A=0
	16. സമീപഭാവിയിൽ ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാനുള്ള സാധ്യതയെക്കുറിച്ച് ഞാൻ ആശങ്കാകുലനാണ്	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായി യോജിക്കുന്നു; N/A=0
അറിവിന്റെ സ്കെയിൽ പ്രസ്താവന ശരിയോ തെറ്റോ എന്ന് പറയുക ശരി:	17. സ്ട്രെസ്സ് അഥവാ മാനസികസമ്മർദ്ദം ഹൃദയാഘാതത്തിന്റെയും പക്ഷാഘാതത്തിന്റെയും പ്രധാന കാരണങ്ങളിലൊന്നാണ്.	T= 1 F= 0
	18. നടത്തവും പൂന്തോട്ട പരിപാലനവും ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാനുള്ള സാധ്യത കുറയ്ക്കുന്ന വ്യായാമങ്ങളായി കണക്കാക്കപ്പെടുന്നു	T= 1 F= 0
	19. ആഴ്ചയിൽ 2 1/2 മണിക്കൂർ വീതം മിതമായ തോതിൽ ശാരീരിക പ്രവർത്തനങ്ങൾ ചെയ്യുന്നത് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാനുള്ള സാധ്യത കുറക്കുന്നു.	T= 1 F= 0
	20. പ്രമേഹമുള്ള ആളുകൾക്ക് ഹൃദയാഘാതം അല്ലെങ്കിൽ പക്ഷാഘാതം വരാനുള്ള സാധ്യത കൂടുതലാണ്.	T= 1 F= 0

സ്കോർ = 1 തെറ്റ് അല്ലെങ്കിൽ അറിയില്ല : സ്കോർ= 0	21. നിങ്ങളുടെ മാനസികസമ്മർദ്ദം നിയന്ത്രിക്കുന്നത് നിങ്ങളുടെ രക്താതിസമ്മർദ്ദം നിയന്ത്രിക്കാൻ സഹായകമാകും	T= 1 F= 0
	22. ഉയർന്ന അളവിൽ മദ്യം കുടിക്കുന്നത് നിങ്ങളുടെ കൊളസ്ട്രോൾ, ട്രൈഗ്ലിസറൈഡ് അളവ് വർദ്ധിപ്പിക്കും.	T= 1 F= 0
	23. ഹൃദ്രോഗത്തിന്റെ കുടുംബ പശ്ചാത്തലം രക്തസമ്മർദ്ദത്തിനുള്ള ഒരു അപകട ഘടകമല്ല.	T= 0 F= 1
	24. പുകവലിക്കുന്നവർക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ വരാൻ ഉള്ള അപകട സാധ്യത ഉണ്ട്.	T= 1 F= 0
	25. മതിയായ ഉറക്കം (ദിവസേന 7- 8 മണിക്കൂർ വരെ) ഹൃദയാഘാതം പക്ഷാഘാതം ഇവ ഉണ്ടാകാൻ ഉള്ള സാധ്യത കുറക്കുവാൻ നിങ്ങളെ സഹായിക്കും .	T= 1 F= 0
	26. 20-50 വർഷം പ്രായമുള്ള ആളുകൾക്ക് ഹൃദയാഘാതമോ പക്ഷാഘാതമോ ഉണ്ടാകാനുള്ള സാധ്യതയില്ല	F= 1 T= 0
തിരിച്ചറിഞ്ഞു ആനുകൂല്യങ്ങളും ഉദ്ദേശ്യങ്ങൾ മാറ്റം	27. ആഴ്ചയിൽ കുറഞ്ഞത് 2 1/2 മണിക്കൂറെങ്കിലും വ്യായാമം ചെയ്യുന്നതിനെക്കുറിച്ച് ഞാൻ ചിന്തിക്കുന്നു.	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായിയോജിക്കുന്നു; N/A=0
	28. ആഴ്ചയിൽ കുറഞ്ഞത് 2 1/2 മണിക്കൂറെങ്കിലും വ്യായാമം എനിക്ക് ചെയ്യണം അല്ലെങ്കിൽ ചെയ്യാൻ ഞാൻ ഉദ്ദേശിക്കുന്നു	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു;

		3= സമ്മതിക്കുന്നു; 4= ശക്തമായി യോജിക്കുന്നു; N/A=0
	29. ആഴ്ചയിൽ കുറഞ്ഞത് 21/2 മണിക്കൂറെങ്കിലും വ്യായാമം ചെയ്യുമ്പോൾ എന്റെ ഹൃദയത്തിന്റെ ആരോഗ്യത്തിന് വേണ്ടി ഞാൻ എന്തെങ്കിലും നല്ലത് ചെയ്യുന്നു.	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായി യോജിക്കുന്നു; N/A=0
	30. അടുത്ത രണ്ട് മാസത്തിനുള്ളിൽ, ആഴ്ചയിൽ കുറഞ്ഞത് 21/2 മണിക്കൂറെങ്കിലും വ്യായാമം ചെയ്യുന്നതിലൂടെ ആരോഗ്യകരമായ ഭാരം നിലനിർത്താൻ കഴിയുമെന്ന് എനിക്ക് ഉറപ്പുണ്ട്	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായി യോജിക്കുന്നു; N/A=0
(ആരോഗ്യകരമായ ഭക്ഷണം) ഉദ്ദേശ്യങ്ങൾ)	31. ആഴ്ചയിൽ 2 1/2 മണിക്കൂർ വ്യായാമം ചെയ്യുന്നതിനെക്കുറിച്ച് ഞാൻ ചിന്തിക്കുന്നില്ല.	റിവേഴ്സ് കോഡ് 4= ശക്തമായ് വിയോജിക്കുന്നു; 3= വിയോജിക്കുന്നു; 2= സമ്മതിക്കുന്നു; 1= ശക്തമായി യോജിക്കുന്നു; N/A=0

	32. ദിവസം കുറഞ്ഞത് അഞ്ച് ഭാഗമെങ്കിലും പഴങ്ങളും പച്ചക്കറികളും കഴിക്കുമ്പോൾ എന്റെ ഹൃദയത്തിന്റെ ആരോഗ്യത്തിനായി ഞാൻ എന്തെങ്കിലും നല്ലത് ചെയ്യുന്നു.	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായി യോജിക്കുന്നു; N/A=0
	33. എന്റെ വ്യായാമം ആഴ്ചയിൽ കുറഞ്ഞത് 21/2 മണിക്കൂറായി വർദ്ധിപ്പിക്കുന്നത് ഹൃദയാഘാതം അല്ലെങ്കിൽ പക്ഷാഘാതം ഉണ്ടാകാനുള്ള സാധ്യത കുറയ്ക്കും.	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായി യോജിക്കുന്നു; N/A=0
	34. അടുത്ത രണ്ട് മാസത്തിനുള്ളിൽ പ്രതിദിനം കുറഞ്ഞത് അഞ്ച് ഭാഗമെങ്കിലും പഴങ്ങളും പച്ചക്കറികളും കഴിക്കാൻ കഴിയുമെന്ന് എനിക്ക് ഉറപ്പുണ്ട്.	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു; 4= ശക്തമായി യോജിക്കുന്നു; N/A=0
	35. ദിവസം കുറഞ്ഞത് അഞ്ച് ഭാഗങ്ങളെങ്കിലും പഴങ്ങളും പച്ചക്കറികളും കഴിക്കുന്നതിനെക്കുറിച്ച് ഞാൻ ചിന്തിക്കുന്നു.	1= ശക്തമായ് വിയോജിക്കുന്നു; 2= വിയോജിക്കുന്നു; 3= സമ്മതിക്കുന്നു;

		4= ശക്തമായി യോജിക്കുന്നു; N/A=0
	36. ദിവസം കുറഞ്ഞത് അഞ്ച് ഭാഗമെങ്കിലും പഴങ്ങളും പച്ചക്കറികളും കഴിക്കുന്നതിനെക്കുറിച്ച് ഞാൻ ചിന്തിക്കുന്നില്ല.	റിവേഴ്സ് കോഡ് 4= ശക്തമായ് വിയോജിക്കുന്നു; 3= വിയോജിക്കുന്നു; 2= സമ്മതിക്കുന്നു; 1= ശക്തമായി യോജിക്കുന്നു; N/A=0
വിഭാഗം 3. ഇനിപ്പറയുന്ന പ്രതിബന്ധങ്ങളെ മറികടക്കാൻ കഴിയുമെന്ന്/സ്വയം നിയന്ത്രിക്കാൻ കഴിയുമെന്ന് നിങ്ങൾക്ക് എത്രത്തോളം ഉറപ്പുണ്ട്		
1 പോഷകാഹാര സ്വയം ഫലപ്രാപ്തി സ്കെയിൽ ഹൃദയാഘാതം അല്ലെങ്കിൽ പക്ഷാഘാതം തടയുന്നതിന് ആരോഗ്യകരമായ ഭക്ഷണക്ര	37. എനിക്ക് ആരോഗ്യകരമായ ഭക്ഷണങ്ങളിൽ ഉറച്ചുനിൽക്കാൻ കഴിയും ... 1 ... ആവശ്യമായ ദിനചര്യകൾ വികസിപ്പിക്കാൻ എനിക്ക് വളരെ സമയം ആവശ്യമാണെങ്കിലും. 2 ... അത് പ്രാവർത്തികമാകുന്നത് വരെ ഞാൻ പലതവണ ശ്രമിക്കേണ്ടി വന്നാലും. 3 ... എന്റെ പോഷകാഹാരത്തിന്റെ മുഴുവൻ രീതിയും പുനർവിചിന്തനം	1= വളരെ അനിശ്ചിതത്വം 2= അനിശ്ചിതത്വം 3=ഉറപ്പ് ഉണ്ട് 4= പൂർണ്ണ ഉറപ്പ് ഉണ്ട് N/A=0

മം കഴിക്കാൻ നിങ്ങൾ സ്വയം വിശ്വസിക്കുന്ന പരിധി	ചെയ്യുകയും എന്റെ പ്രിയപ്പെട്ട ഭക്ഷണങ്ങൾ ഒഴിവാക്കുകയും ചെയ്യേണ്ടി വന്നാലും. 4 ... തുടക്കത്തിൽ ശ്രമങ്ങൾ നടത്തുമ്പോൾ മറ്റുള്ളവരിൽ നിന്ന് എനിക്ക് വലിയ പിന്തുണ ലഭിക്കുന്നില്ലെങ്കിലും. 5 ... വിശദമായ ഒരു പദ്ധതി തയ്യാറാക്കേണ്ടി വന്നാലും.	
2. ശാരീരിക വ്യായാമം സ്വയം ഫലപ്രാപ്തി സ്കെയിൽ	38. അനുയോജ്യമായ ശരീരഭാരം നിലനിർത്താൻ കഴിയുമെന്നു നിങ്ങൾ സ്വയം എത്രമാത്രം വിശ്വസിക്കുന്നു"ഇനിപ്പറയുന്ന പ്രതിബന്ധങ്ങളെ മറികടക്കാൻ കഴിയുമെന്ന് നിങ്ങൾക്ക് എത്രത്തോളം ഉറപ്പുണ്ട്?" എന്റെ വ്യായാമ ഉദ്ദേശ്യങ്ങൾ നിറവേറ്റാൻ എനിക്ക് കഴിയും, ... 1 ... എനിക്ക് വേവലാതികളും പ്രശ്നങ്ങളും ഉണ്ടാകുമ്പോൾ പോലും. 2 ... എനിക്ക് വിഷാദം തോന്നിയാലും. 3 ... ഞാൻ തളർന്നിരിക്കുമ്പോൾ പോലും.	1= വളരെ അനിശ്ചിതത്വം 2= അനിശ്ചിതത്വം 3=ഉറപ്പ് ഉണ്ട് 4=പൂർണ്ണ ഉറപ്പ് ഉണ്ട് N/A=0

	4... ഞാൻ തിരക്കിലായിരിക്കുമ്പോൾ പോലും.	
ആൽക്കഹോൾ റെസിസ്റ്റൻസ് സ്വയം ഫലപ്രാപ്തിസ്കെയിൽ	39. എനിക്ക് എന്നെത്തന്നെ നിയന്ത്രിക്കാൻ കഴിയുമെന്ന് എനിക്ക് ഉറപ്പുണ്ട്... 1 ... എന്റെ മദ്യപാനം കുറയ്ക്കാൻ 2 ... മദ്യം ഒട്ടും കഴിക്കാതിരിക്കാൻ. 3 ... വിശേഷാവസരങ്ങളിൽ മാത്രം കുടിക്കുവാൻ	1= വളരെ അനിശ്ചിതത്വം 2= അനിശ്ചിതത്വം 3= ഉറപ്പ് ഉണ്ട് 4=വളരെ ഉറപ്പ് ഉണ്ട് N/A=0
4. **a)**രോഗാവസ്ഥകൾ നിങ്ങളുടെ ലാബ് റിപ്പോർട്ട് ഡോക്ടറുടെ റിപ്പോർട്ട് ഇവ പരിശോധിച്ച് രേഖപ്പെടുത്തുന്നു	**40.** ഏതെങ്കിലും രോഗാവസ്ഥകൾ നിങ്ങൾക്ക് നിർണ്ണയിക്കപ്പെട്ടിട്ടുണ്ടോ?	
	1. രക്താതി സമ്മർദ്ദം	ഉണ്ട് =1 ഇല്ല =0
	2. ഡിസ്ലിപിഡെമിയ(കൊളസ്ട്രോൾ)	ഉണ്ട് =1 ഇല്ല =0
	3. പ്രമേഹം	ഉണ്ട് =1 ഇല്ല =0
	4. വൃക്കരോഗം	ഉണ്ട് =1 ഇല്ല =0
	5. വിട്ടുമാറാത്ത ശ്വാസകോശ രോഗങ്ങൾ /ആസ്തമ	ഉണ്ട് =1 ഇല്ല =0
	6. ആർത്രൈറ്റിസ് / പേശി കളെയും അസ്ഥികളെയും ബാധിക്കുന്ന അസുഖങ്ങൾ	ഉണ്ട് =1 ഇല്ല =0
	7. അനീമിയ/വിളർച്ച	ഉണ്ട് =1 ഇല്ല =0

	8. തൈറോയ്ഡ്	ഉണ്ട് =1 ഇല്ല =0
	9. മറ്റുള്ളവ (ദയവായി വ്യക്തമാക്കുക)	
4b). ഹൃദ്രോഗത്തിന്റെ കുടുംബ പശ്ചാത്തലം	4**1.** ഹൃദ്രോഗത്തിന്റെ കുടുംബ പശ്ചാത്തലം ഉണ്ടോ? അതായത് ഏറ്റവും അടുത്ത ബന്ധുക്കളിൽ (പുരുഷൻ < 55 വയസ്സ്, സ്ത്രീ < 65 വയസ്സ്) മുന്നേ ഹൃദ്രോഗമോ **(**ഹൃദയാഘാതം**,** മയോകാർഡിയൽ ഇൻഫാക്ഷൻ, സിഎഡി തുടങ്ങിയ ഹൃദ്രോഗങ്ങൾ**),** പക്ഷാഘാതമോ വന്നിട്ടുണ്ടോ?	ഉണ്ട് =1 ഇല്ല =0
വിഭാഗം 5 സ്വയം പരിചരണ സമ്പ്രദായങ്ങൾ		
1. ബിപി, ബ്ലഡ് ഷുഗർ, കൊളസ്ട്രോൾ എന്നിവയുടെ നിരീക്ഷണം	**42.**താങ്കളുടെ വീട്ടിൽ ബിപി അളക്കുന്നതിനുള്ള ഉപകരണം ഉണ്ടോ?	ഉണ്ട് =1 ഇല്ല =0(Qn 4**3** ഒഴിവാക്കുക)
	4**3**. ഉണ്ടെങ്കിൽ പ്രതിമാസം ശരാശരി എത്ര തവണ നിങ്ങൾ നിങ്ങളുടെ ബിപി നിരീക്ഷിച്ചു?	
	4**4**. ഇല്ലെങ്കിൽ,ഏതെങ്കിലും ആരോഗ്യ പരിപാലന കേന്ദ്രത്തിൽ നിന്ന് നിങ്ങളുടെ രക്തസമ്മർദ്ദം എത്ര ഇടവിട്ട് പരിശോധിക്കാറുണ്ട്?	1= മാസത്തിലൊരിക്കൽ 2 = മൂന്ന് മാസത്തിലൊരിക്കൽ 3= ആറുമാസത്തിലൊരിക്കൽ 4= വർഷത്തിലൊ

		രിക്കൽ 5 = രോഗലക്ഷണങ്ങൾ ഉണ്ടാകുമ്പോൾ
	45.നിങ്ങളുടെ വീട്ടിൽ ബ്ലഡ് ഷുഗർ അളക്കുന്ന ഉപകരണം ഉണ്ടോ?	ഉണ്ട് =1 ഇല്ല =0 **(**Qn 4**6** ഒഴിവാക്കുക**)**
	47. ഉണ്ടെങ്കിൽ, പ്രതിമാസം ശരാശരി എത്ര തവണ നിങ്ങൾ നിങ്ങളുടെ ബ്ലഡ് ഷുഗർ നിരീക്ഷിച്ചു?	
	48. ഇല്ലെങ്കിൽ, ഏതെങ്കിലും ആരോഗ്യ പരിപാലന കേന്ദ്രത്തിൽ നിന്ന് എത്ര ഇടവിട്ട് നിങ്ങളുടെ രക്തത്തിലെ ഗ്ലൂക്കോസ് പരിശോധിക്കുന്നു?	1= മാസത്തിൽ ഒരിക്കൽ 2 = മൂന്ന് മാസത്തിലൊരിക്കൽ 3 = ആറ് മാസത്തിലൊരിക്കൽ 4 = വർഷത്തിൽ ഒരിക്കൽ 5 = രോഗലക്ഷണങ്ങൾ ഉണ്ടാകുമ്പോൾ
	49. എത്ര ഇടവിട്ട് ആരോഗ്യ പരിപാലന കേന്ദ്രത്തിൽ നിന്ന് നിങ്ങളുടെ രക്തത്തിലെ കൊളസ്ട്രോൾ പരിശോധിക്കുന്നു?	1= മാസത്തിൽ ഒരിക്കൽ 2 = മൂന്ന് മാസത്തിലൊരിക്കൽ 3 =

		ആറ് മാസത്തിലൊരിക്കൽ 4 = വർഷത്തിൽ ഒരിക്കൽ 5 = രോഗലക്ഷണങ്ങൾ ഉണ്ടാകുമ്പോൾ
മരുന്നിന്റെ ഉപയോഗം:	കഴിഞ്ഞ 7 ദിവസങ്ങളിൽ നിങ്ങൾ എത്ര തവണ	
	5**0**. നിങ്ങളുടെ .രക്താതി സമ്മർദ്ദം കുറയ്ക്കാൻ ഉള്ള ഗുളികകൾ നിർദ്ദേശിച്ച എണ്ണം കഴിച്ചു?	0 1 2 3 4 5 6 7 ¨ എനിക്ക് രക്തസമ്മർദ്ദ ഗുളികകൾ നിർദ്ദേശിച്ചിട്ടില്ല.
	5**1**. നിങ്ങളുടെ പ്രമേഹ ഗുളികകളുടെ നിർദ്ദേശിച്ച എണ്ണം കഴിച്ചു?	0 1 2 3 4 5 6 7 ¨ എനിക്ക് പ്രമേഹ ഗുളികകൾ നിർദ്ദേശിച്ചിട്ടില്ല.
	5**2**. നിങ്ങളുടെ കൊളസ്ട്രോൾ ഗുളികകളുടെ നിർദ്ദേശിച്ച എണ്ണം കഴിച്ചു?	0 1 2 3 4 5 6 7 ¨ എനിക്ക് കൊളസ്ട്രോൾ ഗുളികകൾ

		നിർദ്ദേശിച്ചിട്ടില്ല.
ഭക്ഷണക്രമം	കഴിഞ്ഞ 7 ദിവസങ്ങളിൽ നിങ്ങൾ എത്ര തവണ	
	53. നിലക്കടല, കശുവണ്ടി തുടങ്ങിയ പരിപ്പുവർഗങ്ങൾ/ നട്സ് കഴിച്ചു?	0 1 2 3 4 5 6 7
	54. വൻപയർ ,കടല ,ചെറുപയർ , തുവര തുടങ്ങിയ പയർവർഗ്ഗങ്ങൾ കഴിച്ചു?	0 1 2 3 4 5 6 7
	55. മുട്ട കഴിച്ചു?	0 1 2 3 4 5 6 7
	56. ഉപ്പ് കൂടുതലുള്ള ഭക്ഷണങ്ങൾ (അച്ചാറുകൾ, പപ്പടം, ഉണങ്ങിയ മത്സ്യം) കഴിച്ചു?	0 1 2 3 4 5 6 7
	57.അഞ്ചോ അതിലധികമോ പഴങ്ങളും പച്ചക്കറികളും കഴിച്ചു?	0 1 2 3 4 5 6 7
	58. ഒന്നിൽ കൂടുതൽ പഴങ്ങൾ കഴിച്ചു?	0 1 2 3 4 5 6 7
	59. ഒന്നിൽ കൂടുതൽ പച്ചക്കറികൾ കഴിച്ചു?	0 1 2 3 4 5 6 7
	60. പാൽ കഴിച്ചു (ഒരു ഗ്ലാസ്സിൽ, കാപ്പിയോ ചായയോ)?	0 1 2 3 4 5 6 7
	61. ഇലക്കറികൾ :ചീര ഇലകൾ, മുരിങ്ങ ഇല,തഴുതാമ, പയറില, നെയുണ്ണി ഇല, മത്തങ്ങ ഇല , ചേന ഇല, ചേമ്പില, കൊടിത്തൂവ ഇല, കാബേജ്, കോളിഫ്ളവർ എന്നിങ്ങനെ ഉള്ളവ കഴിച്ചു?	0 1 2 3 4 5 6 7
	62. വാഴപ്പഴം, തണ്ണിമത്തൻ, പേരക്ക, മാങ്ങ, സപ്പോട്ട, ആത്തച്ചക്ക,ചക്ക ഓറഞ്ച്,	0 1 2 3 4 5 6 7

	ആപ്പിൾ, അല്ലെങ്കിൽ മുന്തിരി എന്നിങ്ങനെ ഉള്ള ഫലവർഗങ്ങൾ കഴിച്ചു?	
	63. കുത്തരി, ധാന്യങ്ങൾ ഗോതമ്പ്, ഗോതമ്പ്, പൊടികൾ ഇവയുള്ള ഭക്ഷണങ്ങൾ കഴിച്ചു.	0 1 2 3 4 5 6 7
ശാരീരിക അധ്വാനം	കഴിഞ്ഞ 7 ദിവസങ്ങളിൽ നിങ്ങൾ എത്ര തവണ:	
	64.എ)കുറഞ്ഞത് **30** മിനിറ്റ് സമയമെങ്കിലും ശാരീരിക അധ്വാനത്തിൽ ഏർപ്പെട്ടു? മിതമായ പ്രവർത്തനങ്ങൾ: വീടിന്റെ പരിപാലനം, പാചകം, അടുക്കള പണികൾ, വസ്ത്രങ്ങൾ കഴുകൽ, കന്നുകാലികളുടെ പരിപാലനം, വെള്ളം കൊണ്ടുവരൽ, വിറക് കൊണ്ടുപോകൽ, മറ്റുള്ളവ ഊർജ്ജസ്വലമായ പ്രവർത്തനങ്ങൾ: കാർഷിക ജോലികൾ, കുഴിക്കൽ, കല്ല് പൊട്ടിക്കൽ, സൈക്കിൾ, മരപ്പണി / മേസ്തിരിപ്പണി, മറ്റുള്ളവ	0 1 2 3 4 5 6 7

	ബി) വീട്ടുപണിയും നിങ്ങളുടെ ജോലിയുടെ ഭാഗമായി ചെയ്യുന്നതല്ലാതെ ഒരു നിർദ്ദിഷ്ട വ്യായാമം ചെയ്യാറുണ്ട്. (നീന്തൽ, നടത്തം പോലുള്ളവ)?	0 1 2 3 4 5 6 7
ശരീരഭാരം നിയന്ത്രിക്കൽ	കഴിഞ്ഞ **30** ദിവസങ്ങളിൽ നിങ്ങളുടെ ഭാരം നിയന്ത്രിക്കാനുള്ള നിങ്ങളുടെ ശ്രമങ്ങളെക്കുറിച്ച് ഇനിപ്പറയുന്ന ചോദ്യങ്ങൾ ചോദിക്കുന്നു. അഥവാ കഴിഞ്ഞ മാസം നിങ്ങൾ രോഗിയായിരുന്നു എങ്കിൽ നിങ്ങൾക്ക് അസുഖമില്ലാത്ത മുൻമാസത്തെക്കുറിച്ച് ചിന്തിക്കുക. ശരീരഭാരം കുറയ്ക്കാനോ ശരീരഭാരം നിലനിർത്താനോ നിങ്ങൾ എന്ത് ചെയ്യുന്നുവെന്ന് മികച്ച രീതിയിൽ വിവരിക്കുന്ന ഒരു ഉത്തരം അടയാളപ്പെടുത്തുക.	ശക്തമായി വിയോജിക്കുന്നു=1, വിയോജിക്കുന്നു=2, ഉറപ്പില്ല=3, Agree=4, ശക്തമായി യോജിക്കുന്നു=5.
	ശരീരഭാരം കുറയ്ക്കുന്നതിനോ എന്റെ ഭാരം നിലനിർത്തുന്നതിനോ വേണ്ടി.	
	6**5**. ഞാൻ കഴിക്കുന്ന ഭക്ഷണത്തിന്റെ കാര്യത്തിൽ ഞാൻ ശ്രദ്ധാലുവാണ്.	1 2 3 4 5
	6**6**. പലചരക്ക് കടയിൽ പോയാൽ ഭക്ഷണത്തിന്റെ ലേബലുകൾ ഞാൻ വായിക്കാറുണ്ട്.	1 2 3 4 5
	6**7**. ശരീരഭാരം കുറയ്ക്കുന്നതിനോ നിലനിർത്തുന്നതിനോ വേണ്ടി ഞാൻ വ്യായാമം ചെയ്യുന്നു.	1 2 3 4 5

	68. ഞാൻ ചെറിയ അളവിലാണ് ഭക്ഷണം കഴിക്കുന്നത് അല്ലെങ്കിൽ കുറച്ച് കഴിക്കുന്നു	1 2 3 4 5
	69. അനാരോഗ്യകരമായ ഭക്ഷണങ്ങൾ വാങ്ങുന്നതും വീട്ടിലേക്ക് കൊണ്ടുവരുന്നതും ഞാൻ നിർത്തി.	1 2 3 4 5
	70. ഞാൻ കഴിച്ചുകൊണ്ടിരുന്ന ഭക്ഷണത്തിന് പകരം ആരോഗ്യകരമായ ഭക്ഷണങ്ങൾ കഴിക്കാൻ തുടങ്ങി.	1 2 3 4 5
	71 a)എനിക്ക് ഇഷ്ടമുള്ളതും എന്നാൽ എനിക്ക് നല്ലതല്ലാത്തതുമായ ചില ഭക്ഷണസാധനങ്ങൾ കുറയ്ക്കുകയോ നിർത്തുകയോ ചെയ്തു	1 2 3 4 5
	71 b) ഞാൻ മധുര പാനീയങ്ങൾ ഉദാഹരണത്തിന് മധുരമുള്ള ചായ ,സോഡാ തുടങ്ങിയവ കുടിക്കുന്നത് കുറച്ചു	1 2 3 4 5
	7**2**. ഞാൻ റെസ്റ്റോറന്റുകളിലോ ഫാസ്റ്റ്ഫുഡ് സ്ഥലങ്ങളിലോ ഭക്ഷണം കഴിക്കുന്നത് കുറവാണ്.	1 2 3 4 5
	73. എന്റെ പാചകക്കുറിപ്പുകൾ പരിഷ്കരിച്ചു	1 2 3 4 5
പുകവലി	7**4**. പുകവലി നില: പുകവലിക്കാരൻ (നിലവിലെ എല്ലാ പുകവലിക്കാരും പുകവലി	

	ഉപേക്ഷിക്കുവാൻ ഒരു വർഷത്തിന് ചോടെ ആയി ശ്രമിക്കുന്നവരും) = 1 പുകവലിക്കാത്തവർ (പുകവലിക്കാത്തവർ (അല്ലെങ്കിൽ ഒരു വർഷത്തിൽ കൂടുതൽ ആയിട്ടൂ പുകവലി ഇല്ല) = 0 (ചോദ്യം 77 ഒഴിവാക്കുക)	
	കഴിഞ്ഞ 7 ദിവസങ്ങളിൽ നിങ്ങൾ എത്ര തവണ? 75. എ) സിഗരറ്റ്, ബീഡി, സിഗാർ അല്ലെങ്കിൽ ഹുക്ക എന്നിവ കുറഞ്ഞത് ഒരു പഫ് എടുത്തിട്ടുണ്ട്	1 2 3 4 5 6 7
	ബി) കഴിഞ്ഞ 12 മാസത്തിനിടെ, പുകവലി നിർത്താൻ നിങ്ങൾ ശ്രമിച്ചിട്ടുണ്ടോ?	ഉവ്വ്=1 ഇല്ല=0
	ഒരു മുറിയിൽ ഉള്ളപ്പോൾ അല്ലെങ്കിൽ യാത്ര ചെയ്യുമ്പോൾ അടച്ചിട്ട വാഹനത്തിൽ ഒക്കെ ആരെങ്കിലും പുകവലിക്കുമ്പോൾ അവിടെത്തന്നെ നിന്നു?	1 2 3 4 5 6 7
	അടുത്ത മൂന്ന് ചോദ്യങ്ങൾ മദ്യപാനത്തെക്കുറിച്ചാണ്. ഒരു മദ്യപാനത്തെ ഇങ്ങനെ നിർവചിച്ചിരിക്കുന്നു: • 250 മില്ലി ബിയർ. • 100 മില്ലി വീഞ്ഞ്. • 30 മില്ലി വാറ്റിയെടുത്ത സ്പിരിറ്റ് അല്ലെങ്കിൽ മദ്യം (ഉദാ.ബ്രാണ്ടി, റം, വോഡ്ക അല്ലെങ്കിൽ വിസ്കി).	
	76. നിങ്ങൾ മദ്യപിക്കാറുണ്ടോ?	

	ഉവ്വ് (കഴിഞ്ഞ 30 ദിവസത്തിനുള്ളിൽ എന്തെങ്കിലും മദ്യം കഴിച്ചു) = 1 ഇല്ല (ഒട്ടും മദ്യം കഴിച്ചിട്ടില്ല)= 0 ചോദ്യം80 ഒഴിവാക്കുക	
	77.എ) ആഴ്ചയിൽ ശരാശരി എത്ര ദിവസം നിങ്ങൾ മദ്യം കഴിക്കുന്നു?? 1 2 3 4 5 6 7	
	ബി) നിങ്ങൾ മദ്യപിക്കുന്ന ഒരു സാധാരണ ദിവസം, നിങ്ങൾ എത്ര ഡ്രിംഗ് സ് മദ്യം കഴിക്കുന്നു?	
	സി) കഴിഞ്ഞ മാസത്തിൽ ദിവസം നിങ്ങൾ കഴിച്ച ഏറ്റവും കൂടുതൽ പാനീയത്തിന്റെ അളവ് എത്രയാണ്?	
	78. കഴിഞ്ഞ മാസത്തിൽ, നിങ്ങളുടെ ഉറക്കത്തിന്റെ മൊത്തത്തിൽ ഉള്ള ഗുണനിലവാരം നിങ്ങൾ എങ്ങനെ റേറ്റുചെയ്യും?	1= വളരെ നല്ലത് 2= നല്ലത് 3=മോശമാണ് 4= വളരെ മോശം
	79. ഇതുവരെ പരിചയം ഇല്ലാത്തതോ അറിയാത്തതോ ആയ അല്ലെങ്കിൽ പുതിയ സാഹചര്യങ്ങളിൽ, നിങ്ങൾക്ക് പലപ്പോഴും ഉത്കണ്ഠയോ പരിഭ്രമമോ തോന്നാറുണ്ടോ?	1=ഇല്ല 2=അപൂർവമായി 3= ചിലപ്പോൾ ഒക്കെ 4= പലപ്പോഴും 5 = മിക്കവാറും എല്ലായ്പ്പോഴും.

<table>
<tr>
<td>വിഭാഗം 6
ഫിസിക്കൽ
,ബയോകെമിക്കൽ
അളവുകൾ</td>
<td>
80. മീറ്ററിൽ ഉയരം
81.കിലോഗ്രാമിൽ ഭാരം
82. ബിപി(mmHg)
<table>
<tr><td>ഇനങ്ങൾ</td><td>ആദ്യ അളവെടുക്കൽ</td><td>രണ്ടാമത്തെ ഇവ്</td></tr>
<tr><td>SBP</td><td></td><td></td></tr>
<tr><td>DBP</td><td></td><td></td></tr>
</table>
83.മൊത്തം കൊളസ്ട്രോൾ (mmol/l)
84.എഫ്.ബി.എസ്.(mg/dl)
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</table>

श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेन्द्रम
तिरुवनन्तपुरम - ६९५०११, केरल, इंडिया
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY, TRIVANDRUM
Thiruvananthapuram - 695 011, Kerala, India
(An Institute of National Importance under Govt. of India)
Grams : Chitramet, Phone : +91-471-2443152, Fax : +91-471-2550728 / 2446433, E-mail : sct@sctimst.ac.in, Website : www.sctimst.ac.in

Institutional Ethics Committee

(IEC Regn No. ECR/189/Inst/KL/2013/RR-21)

SCT/IEC/2014/MARCH/2023 18.04.2022

Dr. Sruthi O
MPH Student, AMCHSS
SCTIMST, Thiruvananthapuram

Dear Dr. Sruthi,

The Institutional Ethics Committee held on 18th March, 2023, reviewed and discussed your application to conduct the study titled "**ASSESSMENT OF CARDIOVASCULAR DISEASE RISK AND RISK PERCEPTION AMONG SCHOOL TEACHERS IN A NORTHERN DISTRICT OF KERALA** (IEC/2014)".

The following members of the Ethics Committee were present at the meeting held on 18th March, 2023.

SL. No.	Member Name	Highest Degree	Gender	Scientific /Non Scientific	Affiliation with Institution(s)
1.	Smt. Sathi Nair	MA (English Literature)	Female	Lay Person	No
2.	Dr. Pradeep S	MBBS, MD	Male	Basic Medical Scientist	No
3.	Dr. Christina George	MD Psychiatry	Female	Clinician	No
4.	Dr. P. Manickam	BSMS, MSc (Epid).,PhD	Male	Health Science Expert/ Social Scientist	No
5.	Adv. Priya Kaimal	LLM, MBL	Female	Legal Expert	No
6.	Dr. Biju Soman	MBBS,MD, DPH, MSc, DLSHTM	Male	Basic Medical Scientist	Yes
7.	Dr. Syam K	MBBS, MD, DM	Male	Clinician	Yes
8.	Dr. Srinivas G	PhD	Male	Basic Medical Scientist (Member Secretary)	Yes

The following documents were reviewed:

Original submission

1. Checklist Form
2. Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 02.03.2023
3. Responses/Amendments made based on the Reviewer's comments
4. IEC Application Form
5. Research Proposal
6. Participant Information Sheet and Informed Consent Form in English and Malayalam
7. Interview schedule in English and Malayalam
8. CV of Principal Investigator and Guide
9. Permission letter from Deputy Director of Education DDE, Kannur
10. Declaration Form
11. SRC Recommendation Letter

Revised submission

1. Checklist Form
2. Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 04.04.2023
3. Copy of IEC Recommendation letter dated 03.04.2023
4. IEC Application Form
5. Research Proposal
6. Information Sheet and Informed Consent Form in English and Malayalam
7. Interview schedule in English and Malayalam
8. CV of Principal Investigator and Guide
9. Permission letter from Deputy Director of Education DDE, Kannur
10. Declaration Form
11. SRC Recommendation Letter

IEC Decision

The IEC approved the conduct of the study in the present form.

Remarks:
The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information/informed consent and asks to be provided a copy of the final report.

There was no member of the study team / Guide who participated in voting / decision making process. The ethics committee is organized and operated according to the requirements of Good Clinical Practice and the requirements of the Indian Council of Medical Research (ICMR).

Sincerely,

Dr. G. Srinivas
Member Secretary, IEC

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE (IEC)
SCTIMST, THIRUVANANTHAPURAM

SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY
INSTITUTIONAL ETHICS COMMITTEE (IEC)
SCTIMST
THIRUVANANTHAPURAM

DDEKNR/868/2023-G3

I/227436/2023

~~ഭരണഭാഷ-മാതൃഭാഷ~~

NO TO DRUGS

നമ്പർ:ഡി.ഡി.ഇ/ജി3/868/2023

വിദ്യാഭ്യാസ ഉപഡയറക്ടറുടെ കാര്യാലയം
കണ്ണൂർ, തീയതി : 06-02-2023
ഫോൺ നമ്പർ 0497-2705149
Email: ddeknr.dge@kerala.gov.in

പ്രേഷിതൻ,

വിദ്യാഭ്യാസ ഉപഡയറക്ടർ,
കണ്ണൂർ

സ്വീകർത്താവ്,

Dr. ശ്രുതി ഒ
MPH 2021 ബാച്ച് ,
SCTIMST
തിരുവനന്തപുരം

സർ

വിഷയം: പൊതു വിദ്യാഭ്യാസം -ശ്രീമതി Dr. ശ്രുതി ഒ, തിരുവനന്തപുരം, കണ്ണൂർ ജില്ലയിലെ സ്കൂൾ ടീച്ചേർസ്നറെ CARDIOVASCULAR RISK നെ കറിച്ച് പഠനം -അനുമതി- സംബന്ധിച്ച്

സൂചന : 21/01/2023 തീയതിയിലെ ശ്രീമതി Dr. ശ്രുതി ഒ, തിരുവനന്തപുരം ന്റെ അപേക്ഷ

സൂചനയിലേക്ക് ശ്രദ്ധ ക്ഷണിക്കുന്നു. ശ്രീമതി Dr. ശ്രുതി ഒ, കണ്ണൂർ ജില്ലയിലെ സ്കൂൾ ടീച്ചേർസ്നറെ CARDIOVASCULAR RISK നെ കറിച്ച് പഠനം നടത്തുന്നതിലേക്കായി അനുവാദത്തിനായി സൂചന പ്രകാരം അപേക്ഷ സമർപ്പിച്ചിരുന്നു. അപേക്ഷ വിശദമായി പരിശോധിച്ചതിന്റ അടിസ്ഥാനത്തിൽ ശ്രീമതി Dr. ശ്രുതി ഒ ക്ക് മേൽ പഠനം നടത്തുന്നതിലേക്ക് അനുമതി നൽകുന്നു. കൂടാതെ സ്കൂൾ പ്രവർത്തനത്തിനും കുട്ടികളുടെ അധ്യയനത്തിനും തടസ്സം ഇല്ലാത്ത രീതിയിൽ ടിയരിക്ക് പഠനം നടത്താവുന്നതാണ്. ടി അനുമതി മുകളിൽ സൂചിപ്പിച്ചിട്ടുള്ള പഠനം നടത്തുന്നതിന് വേണ്ടി മാത്രമായിരിക്കും .

വിശ്വസ്തതയോടെ,

DEPUTY DIRECTOR

Document Information

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Sources included in the report

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