A STUDY ON SELECTED AYURVEDIC BELIEFS IN FOOD INTAKE & NON-COMMUNICABLE DISEASE RISK FACTORS LIKE HYPERTENSION, DIABETES MELLITUS, OBESITY & DYSLIPIDEMIA AMONG MIDDLE-AGED ADULTS IN A RURAL POPULATION IN SOUTH KERALA

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DECLARATION

I hereby declare that this dissertation titled "**A study on selected Ayurvedic beliefs in food intake and non-communicable disease risk factors like Hypertension, Diabetes, Obesity and Dyslipidemia, among middle-aged adults in a rural population in South Kerala**" is a bonafide record of my original field 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 Information derived from the published and unpublished work of others has been duly acknowledged in the text.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 entitled "***A study on selected Ayurvedic beliefs in food intake and non-communicable disease risk factors like Hypertension, Diabetes, Obesity and Dyslipidaemia, among middle-aged adults in a rural population in South Kerala***" is a record of the research work undertaken by* Mr BALASANKAR JM *in partial fulfilment of the requirements for the award of the degree "*Master of Public Health *"under my guidance and supervision.*

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GLOSSARY OF ABBREVIATIONS

NCD	:	Non-communicable diseases
MoH & FW	:	Ministry of Health & Family Welfare
DALY	:	Disability Adjusted Life years
NPCDCS	:	National Programme for Prevention and control of cancer, diabetes, cardiovascular diseases and stroke
WHO	:	World Health Organization
FFQ	:	Food Frequency Questionnaire
ASHA	:	Accredited Social Health Activist
FBS	:	Fasting Blood Sugar
CHC	:	Community Health Centre
GOD-POD	:	Glucose Oxidase & Peroxidase
CHOP-PAP	:	Cholesterol Oxidase phenol 4-aminoantipyrine peroxidase
BMI	:	Body Mass Index
PI	:	Principal Investigator
S. Cholesterol	:	Serum Cholesterol
TC	:	Total Cholesterol
BP	:	Blood Pressure
SBP	:	Systolic Blood Pressure
DBP	:	Diastolic Blood Pressure
APL	:	Above Poverty Line
BPL	:	Below Poverty Line
AAY	:	Anthyodaya Anna Yojana
IDF	:	International Diabetes Federation

AYURVEDIC GLOSSARY

Ahara	:	Food
Ati-lavana aahaara	:	Salty foods
Ati-amla aahara	:	Sour foods
Guru-annapaana	:	Heavy foods which are hard to digest
Snigdha-annapaana	:	Oily/unctuous foods
Ati-dravapaana	:	Excessive intake of liquid foods
Sneha-ati sevanam	:	Excessive consumption of oils & fats
Asatmya aahara	:	Uncongenial foods
Gramya-anupa-audaka mamsa	:	Domestic, marshy animal meat
Vegadharana	:	Suppression of natural urges
Sakrit vegadharana	:	Suppression of urge for defecation
Mutra vegadharana	:	Suppression of urge for urination
Kshut vegadharana	:	Suppression of urge of hunger
Nidra vegadharana	:	Suppression of urge for sleep
Vyaayaama	:	Exercise
Abhyanga	:	External oil massage
Brahma muhurta	:	A time which is recommended to wake up in the morning for every individual to be healthy
Greeshma ritu	:	Summer season
Ch.Su	:	Charaka Samhita Suthrasthana
Pathya	:	Wholesome
Apathya	:	Unwholesome
Aaharakaala	:	Time of food intake
Brahmacharya	:	Celibacy
Indriyas	:	Sense organs
Rookshata	:	Dryness
Yama	:	Duration of time (3 hours)
Vata dosa	:	One of the constituents of body as per Ayurveda
Prakriti	:	Body composition

AYURVEDIC GLOSSARY-Continued

Desa	:	Place of living
Kaala	:	Age and season
Saathmya	:	Homogeneity
Kshava	:	Sneezing
Kasa	:	Cough
Sramaswasa	:	Panting
Jrmbha	:	Yawning
Chardi	:	Vomiting
Retas	:	Semen
Agni	:	Digestive power
Dosha	:	Body humor
Dinacharya	:	Daily regimen
Praanayaama	:	Fourth stage of Ashtanga yoga (eight-limbed path), whose end stage is samadhi (a stage at which individual and universal consciousness unite). Praanayaama emphasizes on breathing exercises.
Asava & Arishta	:	Alcoholic preparations

ABSTRACT

A study on selected Ayurvedic beliefs in food intake and non-communicable disease risk factors like hypertension, diabetes, obesity and dyslipidemia among middle-aged adults in a rural population in South Kerala

Introduction: - The NCD risk factors are on the increase in Kerala. The science of Ayurveda emphasizes lifestyle modification, rather than treating the disease. This study explores the correlation between selected Ayurvedic dietary and regimen risk factors with non-communicable disease risk factors like hypertension, diabetes, dyslipidemia and obesity.

Methods: - A community-based cross-sectional study was conducted among 410 middle-aged adults in Nedumpana Panchayat, Kollam district, using the cluster sampling method. WHO STEPs questionnaire, Food frequency questionnaire (FFQ), and a checklist to assess the use of Ayurvedic dietary risk factors for non-communicable diseases, were used. Following that, the participants underwent biochemical tests for fasting blood sugar (FBS) and serum cholesterol (S.cholesterol). All analyses were conducted using R software version 4.1.2.

Results: The mean age of the participants was 46.0$\pm$5.4. The rate of regular adherence to salty foods [*ati-lavana*] (77.1%), sour foods [*ati-amla*] (80.5%), heavy foods [*guru-annapaana*] (87.3%), oily foods [*snigdha-annapaana*] (67.3%) were found high. Meal frequency was found to be positively associated with diabetes mellitus with 80% of them having a meal frequency of more than four times a day. In multivariate analysis, regular sleep suppression (AOR=1.3, CI-0.8-2.1), and day-sleep habits (AOR-1.7. CI-1.1-2.6) were found to be associated with hypertension. Less physical activity (AOR=2.2, CI-1.2-3.8) and increased frequency of food intake (AOR-1.9, CI-1.1-3.2) were found associated with diabetes. A positive association was found between the habit of bowel suppression (AOR-2.7, CI-1.3-5.6) and sleep suppression (AOR-1.9, CI-1.2-3.2) with hyperlipidemia.

Conclusion: Some Ayurvedic beliefs are found to have an association with NCD risk factors considered. Interventions to reduce the prevalence of selected NCD risk factors incorporating the stipulations of alternative systems could have a significant public health impact.

CHAPTER 1
INTRODUCTION AND LITERATURE REVIEW

1.1 INTRODUCTION

1.1.1 Background

Non-communicable diseases are the leading cause of 71% of deaths globally. More than 15 million people die from an NCD between 30 and 69 years; 85% of these 'premature' deaths occur in low- and middle-income countries. Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million)(Bista et al., 2021). Tobacco use, physical inactivity, the harmful use of alcohol, and unhealthy diets are the modifiable risk factors

Tobacco accounts for over 7.2 million deaths every year (including from the effects of exposure to second-hand smoke) and is projected to increase markedly over the coming years.

•About 4.1 million annual deaths have been attributed to excess salt/sodium intake.

• More than half of the 3.3 million annual deaths attributable to alcohol use are from NCDs, including cancer.

• Around 1.6 million deaths annually can be attributed to insufficient physical activity.

These risk factors contribute to four key metabolic changes, that eventually give rise to non-communicable diseases. Metabolic changes comprise:

- Raised blood pressure.
- Overweight/Obesity.
- Hyperlipidemia.
- Hyperglycaemia.

Elevated Blood pressure contributes to 19% of global deaths, followed by obesity and raised blood glucose levels.

1.1.2 Status of Non-communicable diseases in Indian settings

In India, one in every four people risk dying from a non-communicable disease before the age of 70. In the report named "India: Health of the Nation's States" by the Ministry of Health & Family Welfare (MoH & FW), Government of India, it is stated that, there is a considerable increase in the contribution of non-communicable diseases (NCDs) from 30% of total disease burden (DALY-Disability Adjusted Life Years) in 1990 to 55% in 2016 and also an increase in the proportion of deaths from 37.9% in 1990 to 61.8% in 2016.(Kataria et al., 2020)

Although morbidity & mortality from NCDs mainly occur in adulthood, exposure to risk factors begins in early life, especially during the middle-ages. This implies the need to follow-up these high-risk populations to control this alarming elevation of disease.

1.1.3 Status of Non-communicable diseases in Kerala settings

Kerala has been a hub of NCDs due to rampant urbanization and modernization which had infiltrated even to the grass root levels of the state, irrespective of the region and economic strata, influencing lifestyle of the population for the increased prevalence of NCDs(Sivanantham et al., 2021). Presently, one in five of the population is diabetic, and one in three is hypertensive, which could be attributed to unhealthy dietary patterns and lack of physical activity.(Sarma et al., 2019)

Previous literature shows that there is a high prevalence of NCDs among people belonging to better socio-economic strata. In places like Kerala, where there is no clear demarcation between the rural and urban quality of life, economic strata are seldom a determinant of these trends in NCD prevalence. The after-effects of these diseases in different strata are different at the same time.(Vimala et al., 2009)

The National Programme for prevention and control of Cancer, Diabetes, Cardiovascular diseases and stroke (NPCDCS) has been screening individuals, and providing early diagnosis and treatment, since its implementation. But in the case of Kerala where non-communicable diseases have started creating havoc and communicable diseases have not yet been brought under control, these measures are inadequate.(Cr et al., 2019)

In the case of low socio-economic status groups, serious implications will be felt in the long run, as it gradually diminishes the quality of their lives. Among the rural population, mostly middle-aged adults are engaged in daily labour, which may be the only sort of income for the whole family(Martikainen et al., 2003). Since the diseases demand long term follow-up and treatment, patients and their families eventually become poorer. Sometimes, their jobs prevent them from adhering to the treatments.

1.2 Dietary patterns and risk of non-communicable diseases

Dietary patterns are usually associated with non-communicable diseases. The consumption of high salt food, especially among middle-aged adults, makes them prone to NCDs especially hypertension.(Zheng et al., 2016). Middle-aged groups, usually have an attitude that, their age is the most appropriate age for consumption of a variety of foods, which could be healthy as well as unhealthy(Chatelan and Carrard, 2021).

1.2.1 Dietary patterns among rural communities

Rural communities have comparatively more distribution of risk factors of non-communicable diseases(Menon et al., 2020). In India, many NCD studies have been conducted among rural and urban communities to assess the prevalence of NCD risk factors, with most of them using WHO stepwise approach, which covers behavioural risk factors, physical measurements, biochemical measurements.(Oommen et al., 2016). These showed that a high prevalence of smoking, smokeless tobacco, and reduced fruits and vegetable intake have been found among the rural communities compared to urban

communities (Bhagyalaxmi et al., 2013).

1.2.2 Food frequency questionnaire (FFQ)

Food frequency questionnaires are relevant from a public health point of view, and are easy to answer as well.(Persson et al., 2019). A 24-hour dietary assessment tool is commonly used. It captures detailed information about all foods and beverages consumed in the past 24 hours, most commonly, from midnight to midnight the previous day. In cross-sectional studies, population intake can be described .(Aglago et al., 2017). By this we can assess the patterns, frequency of food intake per day and also the calorific value of food intake.

1.3 Ayurvedic risk factors for NCDs

(*Prayojanam cha asya swasthasya swaasthyarakshanam,*

Aathurasya vikaara prasamanam cha) – (Ch.Su.30/26)

According to Charaka Samhita, Ayurveda has two main objectives:

- '*Swasthasya swasthya rakshanam*'- to help the healthy person to maintain his wellness.
- '*Aaturasya vikara prasamanam*' – to help the diseased person to become healthy and stay healthy forever.

Ayurveda gives more emphasis on the prevention of disease, which means maintaining the health of a healthy person(Godbole et al., 2017). That is why, Ayurveda is said to be as 'Science of life' rather than a treatment modality.

Ayurveda emphasizes on the *tridosha* concept, in which *vata, pitta* and *kapha* are believed to be the main constituents of the body. A person gets diseased when there occurs an imbalance of *doshas* in his body.

1.3.1 Three pillars of life (*Trayopasthambha*)

Ayurveda mentions three pillars of life, which are collectively known as *Trayopasathambha*(Bagde et al., 2013). They include:

- *Ahara* (diet)
- *Nidra* (proper sleep)
- *Brahmacharya* (Abstinence)

1.3.1.1 *Ahara* (Food habits)

Ahara stands for balanced diet and is the first and foremost pillar of Ayurveda. *Ahara* is fundamentally preventive in nature. Ayurveda does not propose that diet is capable of curing all diseases, but the majority of the diseases can be put under control only by making adjustment in dietary habits. It has a unique approach of recommending foods based on the bodily constitution of the individual. It considers the combination of food articles, environmental considerations, method of preparation, nature of the consumer, quantity, time etc. Ayurveda proposes two *aaharakaala*- morning and evening and food in between are not recommended at all. Food should not be taken within one *yama* (3 hours) after the previous meals.

1.3.1.2 *Nidra* (Sleep)

According to Charaka, when *indriyas* (sense organs) are exhausted, men dissociate themselves from their surroundings and the individual sleeps. Day sleep is normally not recommended. It is only advised in *Greeshma Ritu* (summer season), as there will be a predominance of *rookshata* (dryness) and *vata dosha*. Nights are short in this season. Otherwise, day sleep is advised during some special conditions.

1.3.1.3 *Brahmacharya* (Celibacy)

Brahmacharya means balanced sex and worldly life. Besides *ahara* and *nidra*, *brahmacharya* is the third component of *trayopasthambha*. It essentially negates over-indulgence in sex and worldly acts. Ayurveda never favours voluntarily suppressing this urge (thereby inviting diseases) but much emphasis has been placed on the controlled indulgence of sex.

Food habits are considered one of the pillars of life as per Ayurveda. So, it's very important to have healthy and wholesome foods in our routine. Otherwise, it could lead to several chronic diseases. Improper food patterns and regimen are repeatedly mentioned as causes of disease in Ayurveda.

1.3.2 Ayurvedic dietary risk factors for non-communicable diseases

Ayurveda aims mostly to prevent the disease rather than treat the diseased. So, the dietary practices proposed by Ayurveda are meant to be followed to prevent diseases. It categorizes foods as wholesome and unwholesome (*pathya* and *apathya*).(Central Council for Research in Ayurvedic Sciences (India), 2018)

'*Yat annam bhakshayennithya jayathe thaddassi praja*'-which means the outcome depends on the food a person consumes.

The main unwholesome foods for non-communicable diseases(*Ayurveda Based Diet and Life Style Guidelines for Prevention of Cardiac Disorders*, 2018) include:

- Regular intake of salty foods- *ati-lavana aahaara sevana*(Khan et al., 2021).
- Regular intake of sour foods- *ati-amla aahaara sevana*
- Regular intake of heavy foods-*guru-annapaana*
- Regular intake of oily foods- *snigdha-annapaana*
- Regular intake of uncongenial foods-*asaathmya aahaara sevana*

- Regular intake of excess liquid foods-*ati-dravapaana*.(Varshney and Verma, 2018)

Virudhaahara (Incompatible food)- Incompatible food combinations, when consumed will not get eliminated from the body unless eliminative therapy is done. Also, this food consumption may not harm those with regular exercise. The usage of incompatible combinations like fish-curd, chicken-curd, sour fruits-milk, honey-hot water etc. are common nowadays(Bagde and Sawant, 2013). Regular practice of *virudhaahara* can cause many diseases.(Dapurkar, 2019)

The increased prevalence of NCD risk factors can be attributed to dietary risk factors. Ayurveda proposes, that the adherence of an individual to deleterious food habits will be positively related to his chances of getting affected by NCDs. Therefore what Ayurveda proposes is a life-style intervention(Goyal, 2018).

Ayurveda proposes that food shall be taken only when the previously digested meal is fully digested. Food should be wholesome & in moderate quantity. Dietary guidelines incorporate multiple factors comprising *prakriti* (body composition), *dosha* (body humours), *agni* (digestive power), *desa* (place of living), *kaala* (age and season) and *saathmya* (homogeneity) of the individual. Following such a pattern, in the long run, will aid in preventing metabolic diseases. Ayurveda advises taking food only twice a day, preferably one in the morning and one in the evening.(S. et al., 2019).

1.3.3 Ayurvedic regimen risk factors for non-communicable diseases

Ayurveda proposes specific regimens which help us to be healthy. They are included in the chapter of *Dinacharya* (daily regimen)(Panda et al., 2020)

- Waking up at *Brahma Muhurtha*: Ayurveda says waking up at Brahma Muhurta will be beneficial to health (*Braahme muhurthe uttishteth swasto rakshartham*

aayushaha). Usually, *Brahma muhurta* starts 96 minutes before sunrise and lasts 48 minutes. Therefore, this muhurta will be between 3:30AM and 5:30AM. (Sulakshana and Manchak, 2020)

- *Abhyanga* (oil massage)- Daily oil massage especially on the head, sole and ears are very important for the healthy being of an individual.(C et al., 2012)
- *Vyaayaama* (Exercise)- Strong individuals who are habituated to fat-rich diets may routinely practice exercise especially in the winter and spring seasons. In general, Ayurveda recommends that the exercise be done at our 50% capacity until we sweat mildly on the forehead, under the arms, and along the spine or until the first sign of dryness in the mouth.(Pandey and Pandey, 2015)
- Day sleep- Ayurveda considers sleep as a condition when all the *indriyas* (organs) in the body get exhausted. Day sleep is contraindicated as it causes headache, timidness, body heaviness, oedema, anorexia, feeling of phlegm adhered to the heart etc.(Shukla et al., 2014). Day sleep is indicated in *grishma ritu* (summer season) as night duration is less during that time.
- Suppression of natural urges- Ayurveda proposes 13 natural urges like *adhovata* (flatus), *sakrit* (defecation), *mutra* (urine), *kshava* (sneezing), *trit* (thirst), *ksut* (hunger), *nidra* (sleep), *kasa* (cough), *sramaswasa* (panting), *jrmbha* (yawning), *asruvega* (tears), *chardi* (vomiting), *retas* (semen). Suppression of natural urges can lead to many diseases.(Jadhav and Waghulade, 2021).An association exists between suppression of bowel and with coronary artery diseases.(Nifina and Krishnan, 2021). Thus, regular suppression of these natural urges could be one of the risk factors of NCDs.

1.4 Prevention of hypertension through Ayurveda

Ayurveda proposes certain *pathya* (indicated) and *apathya* (contraindicated) foods and regimens to prevent hypertension. It recommends meals at fixed timings, usage of whole grains, lentils, ginger, dried ginger, garlic etc. and regimens like daily exercise, weight reduction, yoga postures and breathing exercises (*praanayaama*) for the prevention of hypertension. Over eating, unhealthy diet, consumption of meat, excessive protein, oil and salty-spicy-sour foods, night awakening, fatigue etc. are contraindicated.(Rani et al., 2019)

1.5 Prevention of diabetes through Ayurveda

In case of diabetes, wholesome diets like cereals especially barley preparations, green gram, Bengal gram, bitter vegetables, fruits like black berry, fenugreek, garlic, mustard oil etc. are recommended. Brisk walking, yoga practice etc. are also proposed.(Sharma et al., 2019)

1.6 Prevention of hyperlipidaemia through Ayurveda

To preventing hyperlipidemia, eating of chapattis made with flour containing green gram, barley, Bengal gram etc. are advised instead of rice. Also, increased consumption of green vegetables, buttermilk, limiting intake of food to only when you feel hungry and regular exercises are advised. Excessive oily fried items, high sugar-containing items, a non-vegetarian diet and day sleep are contraindicated.(Ram et al., 2018)

1.7 Prevention of obesity through Ayurveda

Food grains, pulses, vegetables, meat, hot water, barley, honey, buttermilk, *arishta* and *asava* (alcoholic preparations) etc. are recommended to prevent obesity. Hard work, late nights, sexual activity and reducing therapy are recommended. At the same time, wheat, newly harvested rice, sugar, marshy animals' meat , cold water bath, excessive sleeping,

day sleep etc. are contraindicated.(Gujarathi and Gujarathi, 2013)

1.8 The rationale of the study

Kerala is the southernmost state in India with a population of 3.3 crores. The epidemiological transition in Kerala has been more advanced than in other states. The prevalence of non-communicable diseases is very high here. In this case, a preventive strategy should be advocated to tackle this situation. Life style changes are the primary necessities for the control of NCDs. Alternative medical streams like Ayurveda have been considering preventing the diseases rather than treating the diseased. Its main focus is on diet and regimen, which are the common reasons for non-communicable diseases. In the case of mid-aged adults, they are the population, that should be concentrated on to better the present status of NCDs. These people are to be followed up, as their dietary habits and sedentary lifestyle are in a worrying stage, especially in the case of rural communities. They are not concerned about the upcoming morbidities of NCDs, which will become a part of their lives in due course. So, rather than emphasizing on curing the diseased elder population, equal importance is to be given to the middle-aged rural population, who have been exposed to the risk factors of NCDs. Principles proposed by alternative medicines especially Ayurveda can bring a sustainable difference in the health status of the people of Kerala, if well practiced. These suggestions are part of the life style modification efforts, so only motivation is required, no other financial or technical inputs are necessary to achieve the goals.

CHAPTER-2

METHODS

2.1 Objectives of the study

- To study dietary patterns and their correlation with selected non-communicable disease (NCD) risk factors like diabetes, hypertension, obesity and dyslipidemia among middle-aged persons aged 35-54 years in Nedumpana Grama Panchayat in Kollam district.
- To study the correlation between dietary and preventive stipulations in Ayurveda with selected NCD risk factors in the study population.

2.2 Research question

How are dietary patterns and frequency of food intake associated with selected non-communicable disease risk factors like hypertension, dyslipidaemia, diabetes mellitus & obesity among middle-aged adults of Nedumpana Grama Panchayat, Kollam?

2.3 Study design

Cross-sectional study based on a structured questionnaire, physical examinations and laboratory investigations.

2.4 Study setting

The study was conducted in Nedumpana Grama Panchayat, Kollam. Participants were recruited using the cluster sampling method. Two clusters were taken from each ward. (Total 23 wards).

2.5 Study population

Middle-aged adults of age group 35-54 years in Nedumpana Panchayat.

2.5.1 Inclusion criteria

- The study will include all consenting adults in the age group of 35-54 years.

2.5.2 Exclusion criteria

- Those who are suffering from debilitating disease conditions.

2.6 Sampling criteria

The cluster random sampling method is used for participant recruitment. In this method, the required sample size is achieved by selecting clusters in the area of study, an equal number of participants were chosen from each cluster. The Panchayat has 23 wards and two clusters are chosen from each ward. A total of 46 clusters were generated randomly using a GIS map in R.

2.7 Sample size estimation

The sample size was calculated using Open Epi software 3.01. The population was taken as 51,384 which is the population of Nedumpana Panchayat (Census data 2011). Prevalence of selected NCDs in rural Kerala is 28.25% (Kerala Risk Factors | Cadi 2012) with 95% CI and 5% precision. Considering a 10% non-response rate, the sample size was calculated to be 410.

2.8 Sample selection procedure

The population-adjusted random locations were created using GIS map in R to get the starting points of each cluster. The nearest household to the identified random geolocation (computer generated using the R software) was the first household for each cluster. The household on the right was selected as the next house and it continued till, we got nine eligible subjects. One person was recruited from each household, if more than

one person, a person of the alternate sex or younger one was recruited. The participants selected were permanent residents of that place, tenants and migrant workers were excluded from the study.

There is no specific proportion decided for women. The eligible participant from the household is selected without any gender difference.

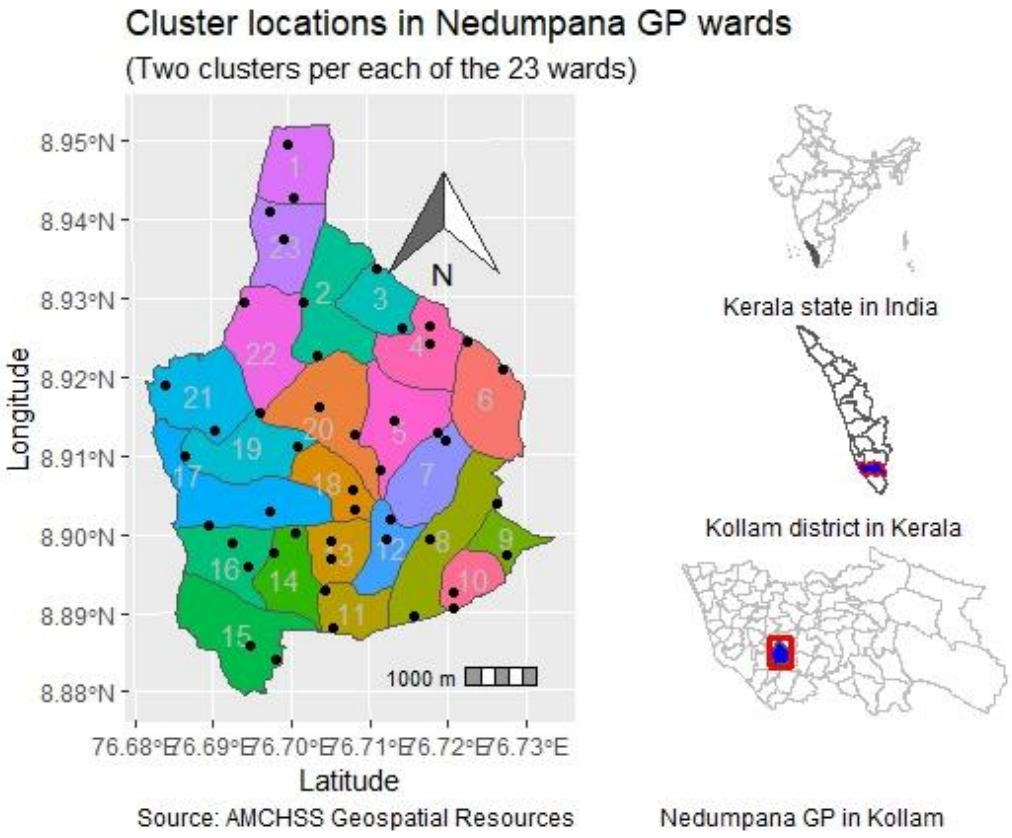


Figure 2.1 Cluster locations in Nedumpana Grama Panchayat generated in R software.

2.9 Data collection process

- The data collection was done by the Principal Investigator (PI) over 2 months (14th March-14th May 2022), assisted by ward members, Accredited Social Health Activists (ASHA) and Kudumbasree workers, using a structured interview questionnaire.
- Anthropometric measurements are taken by ASHA on the very next day of the interview.
- Laboratory investigations are done in the laboratory of Community Health Centre (CHC), Nedumpana, Kollam.
- Blood samples of participants are drawn by CHC lab technician and Kudumbasree Santhwanam worker (who have proficiency in drawing blood from the participants).
- Kudumbasree, a Kerala government initiative for women empowerment, has an intervention program in health- Santhwanam. Women with 12th class education or science graduates are selected and trained to check height, weight, BMI, blood glucose and cholesterol levels.

2.9.1 Data collection instruments

The structured interview schedule was employed using WHO STEP-wise approach for surveillance of NCD risk factors version 3.2. Apart from that a Food Frequency Questionnaire (FFQ) for 24-hour dietary recall and a checklist to assess Ayurvedic dietary as well as regimen risk factors. Anthropometric measurements were taken by ASHA workers and Santhwanam volunteers. A training session was given to them prior to the study to ensure a uniform approach to taking measurements.

Laboratory tests were done at CHC-laboratory, Nedumpana.

2.9.1.2 Instruments used for Physical Measurements:

- Height Measurement was done using TYLON non-stretchable measuring tape (Stanley 130656), Accuracy-one millimetre.
- Weight Measurement was done using SECA 813, flat electronic weighing scale, make with an accuracy of 100 grams
- Blood Pressure was measured using OMRON HEM-7203 battery-operated automatic blood pressure monitors.

In addition to STEP questionnaire, food Frequency questionnaires (FFQ) were used. A checklist will be used to assess the practice of diet as well as regimens by Ayurveda, which includes risk factors of the selected NCDs.

2.9.2 Procedures:

2.9.2.1 Blood Pressure Measurement

Blood pressure measurements were made using OMRON HEM-7203 battery- operated automatic blood pressure monitors by ASHAs, who were given training prior to data collection. Participants were seated upright comfortably and relaxed, with feet uncrossed and feet flat on the floor for 15 minutes. An appropriate size cuff was used and wrapped onto the left arm of the subject after removing or rolling up clothing. The cuff was placed such that the bottom edge of the cuff was 1-2 cm above the elbow and the indicator arrow was aligned with the center of the elbow. The cuff was fastened and the elbow supported such that the cuff was at the level of the subject's heart. Two readings of blood pressure and pulse rate were taken three minutes apart. The machine was switched off between the readings, after recording the systolic and diastolic blood pressure (mm Hg) and the heart rate (beats/minute). In case when the two systolic blood pressure readings varied more than 10 mmHg or the diastolic readings more than 6 mmHg, a third reading was taken.

The mean of the last two measurements of blood pressure was used for analysis. The participant was informed of the blood pressure reading only after the last reading was obtained. A similar manner is followed in taking pulse. If a difference of more 10/min in the pulse is observed between the first and second readings, a third reading was taken.

2.9.2.2 Height Measurement

TYLON non stretchable height measuring tape (Stanley 130656) with accuracy one millimeter, used for research purposes is used. The participant is asked to stand against a wall with feet together, heels against the wall and knee straight. The participant was asked to look straight so that eyes are at ear level. Using a flat board kept over the head, mark the height against the wall. Then the participant is asked to move away and the measurement from floor to the mark is recorded.

2.9.2.3 Weight Measurement

The weight of the participant was measured using an electronic flat weighing scale SECA 813. The device is placed on a flat and firm surface. The participant was asked to remove their footwear and step into the scale with one foot on each side of the scale. The participant is advised to wear light clothing before taking the measurement. The measurement is noted once the participant is standstill with his face forward and arms on the side. The investigator then recorded the weight in kilogram.

2.9.2.4 Laboratory examinations

Bio-chemical tests like Fasting Blood Sugar (FBS) & S. Cholesterol were done at Community Health Centre (CHC) laboratory, Nedumpana. Blood samples were collected with the help of lab technicians of CHC, Nedumpana Panchayat and two Kudumbasree Santhwanam volunteers who were trained for the same. Blood sample was collected between 6:00 AM and 8:30 AM. The collected samples were sent of CHC laboratory within 1 hour of collection. FBS test was done in GOD-POD method (Glucose Oxidase

and Peroxidase method) and serum cholesterol test was done in CHOD-PAP (Cholesterol Oxidase phenol 4-aminoantipyrine peroxidase) method.

Kudumbasree, a Kerala government initiative for women empowerment, has an intervention program in health- Santhwanam. Women with 12th class education or science graduates are selected and given training for checking height, weight, BMI, blood glucose and cholesterol levels.

2.10 Data storage and Analysis

The data entry was done in SCTIMST ODK system, a digital data collection platform provided by SCTIMST. The paper copies of the consent form signed by the participants would be safely preserved with the principal investigator until data acceptance of thesis in keeping with regulatory requirements.

Data analysis was done using R software version 4.1.2 by the principal investigator (PI) under the supervision of the guide. Descriptive statistics of all variables- socio-demographic profile, tobacco-alcohol consumption, Fasting Blood Sugar (FBS), Serum Cholesterol (S.Cholesterol), BMI, blood pressure (BP) and frequency of food intake. Ayurvedic dietary as well as regimen risk factors for non-communicable diseases like regular usage of *ati-lavana* (salty), *ati-amla* (sour), *guru-annapaana* (heavy foods), *snigdha annapaana* (oily foods), *asaathmya aahara* (uncongenial foods) and regular habit of suppressing natural urges, physical activity, daily oil massage. Bivariate and multivariate analyses was performed following the descriptive analysis to find out the significant association between all variables.

The dietary patterns and regimens of the participants and their association with age, BMI, BP, FBS, S.Cholesterol etc. will be looked for. A correlation was done between the Ayurvedic dietary and regimen risk factors and non-communicable disease risk factors with the help of the laboratory tests to prove whether the objective is true.

2.11 Variables under study

Dependent variables

Non-Communicable Disease risk factors such as;

- Blood Pressure [Hypertension] - Systolic Blood Pressure (SBP) ≥ 130 mmHg/ Diastolic Blood Pressure (DBP)≥ 85 mmHg/ those under anti-hypertensive medication are considered as Hypertensive.
- Body Mass Index (BMI) [Obesity] – BMI≥ 25kg/m^2 is considered as obese as per the cut off for South Asia.
- Serum Cholesterol levels [Hyperlipidaemia] – S. Cholesterol≥ 200mg/dL is considered as hyperlipidemia.
- Fasting Blood Sugar levels (Diabetic)- FBS> 100mg/dL was considered as diabetic (All cut off values are based on International Diabetes Federation (IDF) criteria except in case of BMI, where WHO cut off is used).

Independent variables

- Demographic variables such as; Age, sex, marital status.
- Socio-economic variables such as educational status, occupational status etc.
- Ayurvedic dietary risk factors like regular usage of *ati-lavana* (salty), *ati-amla* (sour), *guru-annapaana* (heavy foods), *snigdha annapaana* (oily foods), *asaathmya aahara* (uncongenial foods).
- Ayurvedic regimen risk factors like a regular habit of suppressing natural urges, physical activity and daily oil massage.
- Frequency of food intake.

2.12 Study definitions

2.12.1. Step 1 variables

i. Tobacco use variables

- Current tobacco users- those who have smoked beedi, cigarettes or other tobacco products within the past 30 days.
- Current smokeless tobacco users- those who have used smokeless tobacco products like chewing tobacco and betel leaves, snuff or others in past 30 days.
- Current use of any form of tobacco products- those who have used either smoked or smokeless form of tobacco in the past 30 days.

ii. Alcohol use

- Ever consumed alcohol- Ever used any form of alcohol- beer, wine rum, whisky, or other local preparations in the lifetime
- Current use of alcohol- Consumed alcohol in past 30 days
- Standard drink- it is the concentration or amount of ethanol in a standard glass of beer or wine. The net alcohol content in a standard drink is around 10 grams of ethanol, which may vary from 8-13 grams (One standard drink = 30 ml of spirit or 285 ml of regular beer)

2.12.2. Step 2 variables

i. Obesity

- Body Mass Index is calculated using the formula (BMI)= weight (kg)/height (m^2)
- WHO says South Asian cut off for obesity is greater than 25 kg/ m^2.

ii. Hypertension: According to IDF criteria, hypertension is defined as systolic blood pressure $\geq$ 130mm Hg or diastolic blood pressure $\geq$ 85 mm Hg.

iii. Elevated Fasting Blood Sugar (FBS): FBS >100mg/dL is defined as diabetic.

iv. Hyperlipidaemia: Serum Cholesterol ≥ 200mg/dL is defined as the condition of hyperlipidaemia.

2.12.3. Ayurvedic risk factors

i. Ayurvedic dietary risk factors-

- Regular intake of *ati-lavana aahara* (salty foods) like pickles, pappad, chips etc.
- Regular intake of *ati-amla aahara* (sour foods) like fermented products, sour fruit juices, preserved foods, curd, buttermilk, vinegar, alcohol etc.
- Regular intake of *guru-annapaana* (hard to digest foods) like pizza, cheese mixed foods, bakery products, food items made from black gram, regular intake of non-vegetarian foods etc.
- Regular intake of *snigdha-annapaana* (oily/unctuous foods) like fried oily foods, biriyani, sweets made of excess ghee and milk etc.
- Regular intake of *asaathmya-aahara* (uncongenial foods) like foods which are not suitable to the native place like Chinese food, Arabian food etc.

ii. Ayurvedic regimen risk factors-

- Suppression of natural urges like suppression of flatus, faeces, urine, sneezing, thirst, hunger, sleep, cough, breathing on exertion, yawning, tears, vomiting and semen.
- Sedentary life style (less physical activity).
- Regular day sleep habits.
- Not having regular oil bodily massage.

2.12.4. Food Frequency Questionnaire (FFQ)- Dietary patterns and frequency of food intake is assessed using FFQ.

2.13 Ethical considerations

Ethical clearance for this study was obtained from the Institutional Ethics Committee (IEC) of Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Thiruvananthapuram. Permission for conducting the study was obtained from Panchayat President, Nedumpana, Kollam.

Consent

Informed written consent was obtained from the subject prior to the start of the interview (in the local language, Malayalam) after the doubt, if any were being clarified to the subject. Participation in the study was voluntary. The subject had the freedom to refuse answering questions or opt-out of the study at any stage of the research.

Privacy and confidentiality

The privacy and confidentiality of the subject were honoured. During physical measurements, adequate privacy was provided. The personal information like name, address and contact number were separated and maintained strictly confidential under the investigator's custody. The soft copy and hard copy of the data were stored under the safe custody of the investigator. The data will be stored for two years for further references and clarifications.

Funding

The study was funded by Nedumpana Grama Panchayat, Kollam district, under their project namely 'Athijeevanam-2030', which aims to have a control on NCDs in their population. Funds are allotted mainly to meet the expense for bio-chemical tests of the study participants.

CHAPTER-3

RESULTS

This chapter briefly describes the outcome of data analysis in concordance with the study objectives. A total of 410 individuals participated in the survey. Data were analyzed using R software, version 4.1.2.

3.1 **Socio-Demographic characteristics of participants**

Table 3.1 describes the socio-demographic characteristics of the study population stratified by sex. The participants were middle-aged adults (36-54 years) with a mean age of 46 $\pm$ 5.4. Most of the participants (76.6%) were women and 23.4 percent were men. 96.8% of the participants were married, while 3.17% come under the category of unmarried or widowed.

About 86.4% of the participants had secondary or higher than secondary level of education. Around 48% of the participants were employed, 34.1% are unemployed and 17.8% belong to other category, which are predominantly homemaker women. 50.4% come under the category of APL, 41.7% belong to BPL and 7.80% have Anthyodaya Anna Yojana (AAY) cards.

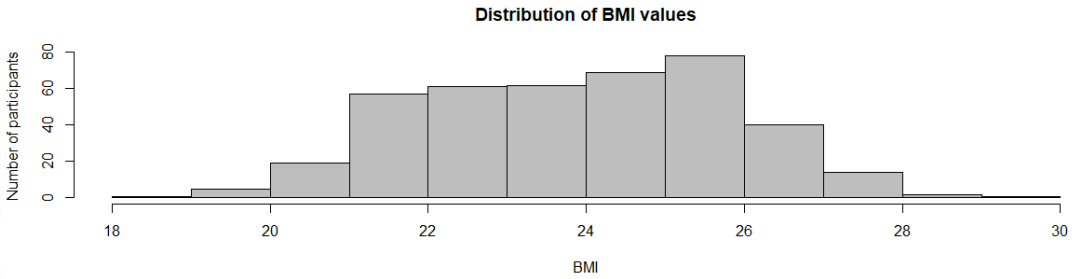
Table 3.1: Distribution of participants by socio-demographic characteristics

Characteristics	Men	Women	Total
	96 (23.5%)	314 (76.5%)	410
Age group, n (%)			
35-39	16 (17%)	47 (15%)	63 (15.3%)
40-44	22 (23%)	53 (17%)	75 (18.2%)
45-49	29 (30%)	124 (39%)	153 (37.3%)
50-54	29 (30%)	90 (29%)	119 (29.1%)
Marital Status n (%)			
Married	92 (96%)	305 (97%)	397 (96.8%)
Others (unmarried/widowed)	4 (4.2%)	9 (2.9%)	13 (3.2%)
Education n (%)			
Below Secondary level	9 (9.4%)	47 (15%)	56 (13.6%)
Secondary level	59 (61%)	166 (53%)	225 (54.8%)
Above secondary level	28 (29%)	101 (32%)	129 (31.4%)
Occupation n (%)			
Employed	85 (89%)	112 (36%)	197 (48.0%)
Unemployed	10 (10%)	130 (41%)	140 (34.1%)
Others (mostly homemakers)	1 (1.0%)	72 (23%)	73 (17.8%)
SES based on ration card n (%)			
APL	56 (59%)	151 (48%)	207 (50.4%)
BPL	32 (34%)	139 (44%)	171 (41.7%)
AAY card	7 (7.4%)	24 (7.6%)	31 (7.5%)

3.2 **Physical Measurements of participants**

- The mean and standard deviation (SD)of height and weight of the participants were 164.6± 6.0 cm and 64.7± 6.7kg respectively.
- Using the formula to calculate Body Mass Index (BMI)= weight (kg)/height^2 (m^2), BMI of the participants is calculated.
- The mean and standard deviation (SD) of BMI were 23.9±1.9. (Fig.3.1)

Figure 3.1: BMI distribution of participants



3.3 **Systolic and Diastolic Blood Pressure of participants.**

Mean ± standard deviation of systolic blood pressure (SBP) (Fig 3.2) and diastolic blood pressure (DBP) was 127.1±11.3 and 79.5±7.9. (Fig 3.3)

Figure 3.2: Systolic blood pressure (SBP) distribution of the participants

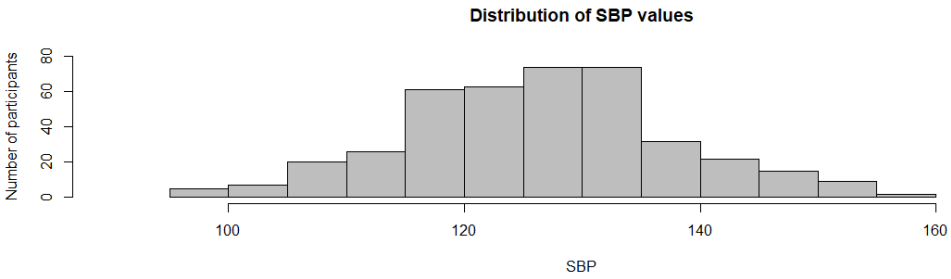
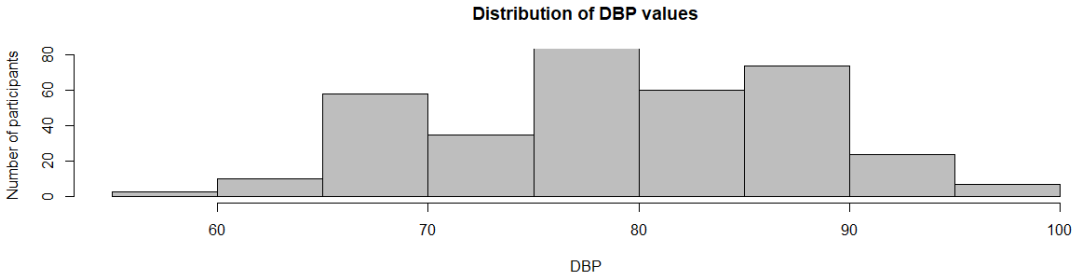


Figure 3.3: Diastolic blood pressure (DBP) distribution of the participants



3.4 Non-communicable disease risk factors

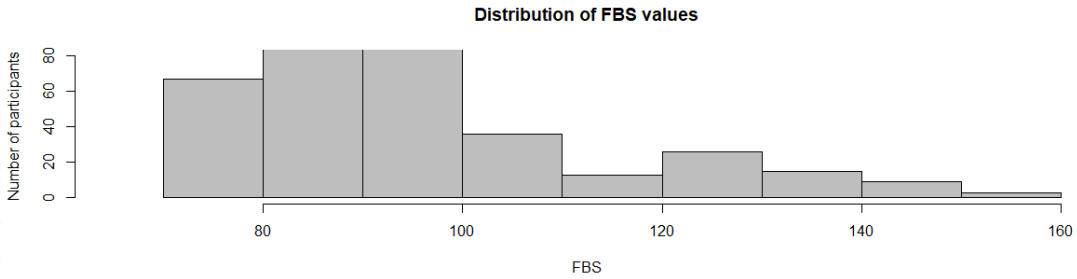
3.4.1 Hypertension

Based on International Diabetes Federation (IDF) guidelines, those who are having Systolic Blood Pressure (SBP)>=130mmHg/Diastolic Blood Pressure (DBP)>=85mmHg/under anti-hypertensive treatment are considered to be hypertensive.

3.4.2 Diabetes mellitus

Those who are having Fasting Blood Sugar (FBS)>=126mg/dL or those who are taking anti-diabetic drugs are considered as diabetic and those having FBS values range between 100 &126mg/dL are considered as pre-diabetic. (IDF guidelines). Figure 3.4 shows the distribution of FBS values of the participants.

Figure 3.4: Fasting blood sugar (FBS) value distribution of participants

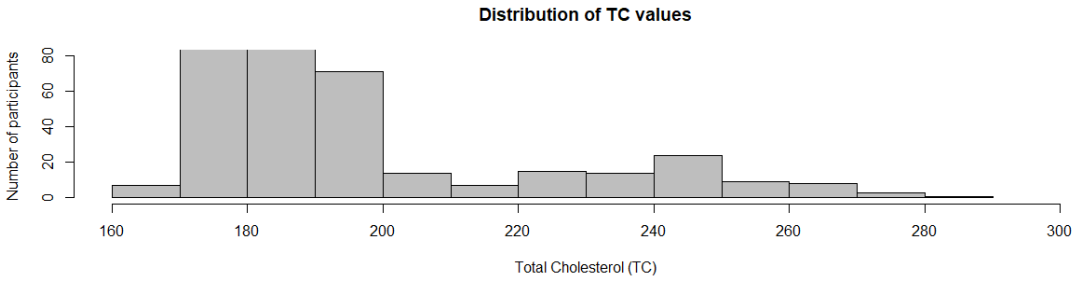


3.4.3 Dyslipidaemia

Those who are having serum cholesterol value≥ 200mg/dL or under medication are considered as participants with dyslipidaemia. (IDF guidelines). Figure 3.5 shows the

distribution of TC values of the participants.

Figure 3.5: Total Cholesterol (TC) value distribution of participants



3.4.4 Obesity

Based on South East Asian cut off, those who are having BMI>25kg/m^2 are considered as obese.

Table 3.2: Status of NCD risk factors among the study population

NCD risk factors	Men n (%)	Women n (%)	Total n (%)
Hypertension	45 (47%)	157 (50%)	202 (49.3%)
Diabetes	36 (38%)	78 (25%)	114 (27.8%)
Hyperlipidemia	26 (27%)	79 (25%)	105 (25.6%)
Obesity	26 (27%)	110 (35%)	136 (33.2%)

From Table 3.2, 27.8% of the participants were diabetic, based on their FBS values and ant-diabetic drug usage as reported by them. Among these, majority are men (38%). Participants with hyperlipidemia were 25.6%, based on serum cholesterol values or under treatment, with no significant difference among both sexes. Based on blood pressure values or anti-hypertensive drug usage reported by the participants, 49.3% were hypertensive and BMI values represent 33.2% among the population.

3.5 Ayurvedic dietary risk factors

Table 3.3: Distribution of participants based on usage of Ayurvedic dietary risk factors.

Dietary risks	Men n (%)	Women n (%)	Total n (%)
Ati-lavana	242 (72%)	74 (77%)	316 (77.1%)
Ati-amla	80 (83%)	250 (80%)	330 (80.5%)
Guru-annapaana	86 (90%)	272 (87%)	358 (87.3%)
Snigdha-aaharq	70 (73%)	206 (66%)	276 (67.3%)
Asaathmya aahara	23 (24%)	44 (14%)	67 (16.3%)

From Table 3.3, the regular usage of Ayurvedic dietary risk factors for NCDs has no significant difference among both sexes. Regular intake of salty foods (*ati-lavana*) was found among 77.1% of the participants. Those who have the habit of regular intake of sour (*ati-amla*), hard to digest foods (*guru-annapaana*) and oily foods were 80.5%, 87.3% and 67.3% respectively. In the case of regular intake of uncongenial foods (*asaathmya*), only 16.3% have such dietary practices, with more percentage men adhering to this.

3.6 *Virudhaahara* (Incompatible foods)

Ayurveda proposes certain food combinations as incompatible, which when used on a regular basis can be fatal for the body. *Virudhaahara* (incompatible food) consumption was found among 37.5% participants which includes 49% men and 34% females.

3.7 Ayurvedic regimen risk factors

Table 3.4: Practice of Ayurvedic regimen risk factors among the participants

Regimen risks	Men n (%)	Women n (%)	Total n (%)
Physical activity	27 (28%)	45 (14%)	72 (17.6%)
Bowel suppression	8 (8.3%)	31 (9.9%)	39 (9.5%)
Hunger suppression	40 (42%)	129 (41%)	169 (41.2%)
Sleep suppression	21 (22%)	110 (35%)	131 (31.9%)
Oil massage habits	61 (64%)	254 (81%)	315 (76.8%)
Day-sleep habits	54 (56%)	149 (47%)	203 (49.5%)
Wake-up time	36 (38%)	128 (41%)	164 (40%)

- Wake-up time refers to waking up in *Brahma muhurta* which starts 96 minutes before sunrise and lasts for 48 minutes.
- Physical activity in Ayurveda refers to exercise at 50% of our capacity, until we sweat mildly on the forehead, under the arms and along the spine or until the first sign of dryness in our mouth.

Table 3.4 represents 17.6% of the population have physical activity, with men. The habit of suppression of natural urges of body like bowel, sleep and hunger were found more among women compared to men. Among these, hunger suppression was found to be more prevalent (41.2%). Daily bodily massage was a regular habit of 76.8% of the participants. Adherence to day-sleep habits were found among 49.5%. Also, around 40% of the participants have the habit of regularly waking up in '*Brahma muhurta'*.

3.8 Frequency of food intake

Table 3.5: Frequency of food intake among the participants

Frequency of food intake	**Men**	**Women**	**Total**
	96 (23.5%)	**314 (76.5%)**	**410**
<=4 times a day	31 (32%)	88 (28%)	119 (29.0%)
>4 times a day	65 (68%)	226 (72%)	290 (70.7%)

Frequency of food intake (Figure 3.6) was more than four times a day among 70.7% of the participants, which ranges up to 9 times a day. (Table 3.5)

Figure 3.6: Distribution of frequency of food intake among the participants

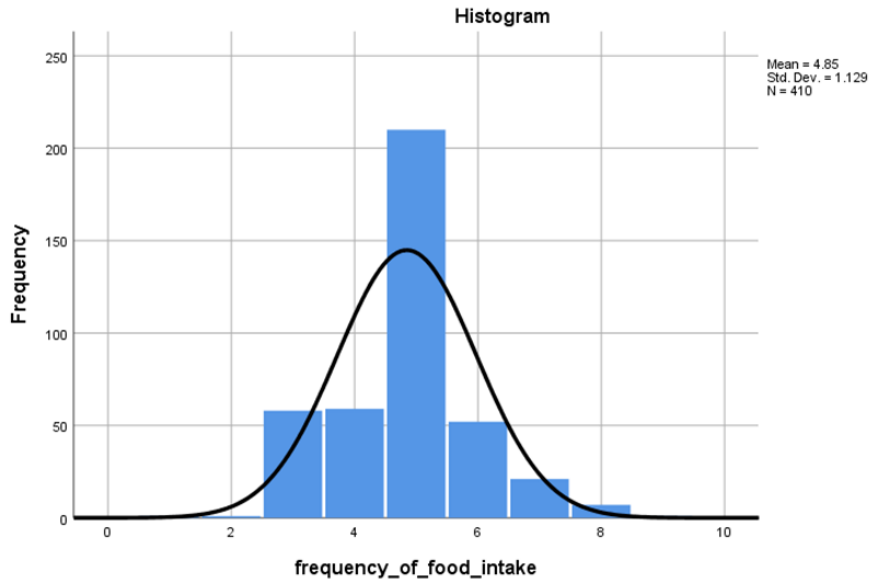


Figure 3.6 represents the distribution of participants based on the frequency of food intake per day, with most of the participants having the meal frequency of around five.

3.9 Results of bivariate analysis

Bivariate analysis was done using hypertension, diabetes mellitus, dyslipidemia, obesity as outcome variable. Association between dependent variables and independent variables were done using R software version 4.1.2.

3.9.1 Association of socio-demographic factors with selected NCDs

The outcomes of hypertension, dyslipidemia and obesity were found positively associated with age group, which shows a pattern of more participants with selected NCDs in higher age groups. In the case of participants with diabetes mellitus, a significant difference among both sexes with 68% of females over 32% males. More hypertensives are found among those who have secondary level education compared to those with above and below secondary level education as in Table 3.6.

Table 3.6: Association of socio-demographic factors with NCD risk factors.

Variables		Hypertension	Diabetes	Hyperlipidemia	Obesity
Age group	35-39	20 (9.9%)	10 (8.8%)	6 (5.7%)	20 (15%)
(in years)	40-44	37(18%)	22 (19%)	19 (18%)	18 (13%)
	45-49	75 (37%)	50 (44%)	43 (41%)	46 (34%)
	50-54	70 (35%)	32 (28%)	37 (35%)	52 (38%)
P-value		**0.007***	0.093	**0.012***	**0.023***
Sex	Male	45 (22%)	36 (32%)	26 (25%)	26 (19%)
	Female	157 (78%)	78 (68%)	79 (75%)	110 (81%)
P-value		0.6	**0.015***	0.7	0.15
Education	>10^{th}	50 (25%)	30 (26%)	28 (27%)	42 (32%)
	10^{th}	114 (56%)	69 (61%)	61 (58%)	73 (54%)
	<10^{th}	38 (19%)	15 (13%)	16 (15%)	20 (15%)
P-value		**0.001***	0.3	0.5	0.9

3.9.2 Association of frequency of food intake with NCD risk factors

Frequency of food intake was found to have a positive association with FBS values of the participants. Majority of participants have a high frequency of food intake. Table 3.7 shows the trend of its association with selected NCD risk factors.

Table 3.7: Association of meal frequency with selected NCD risk factors

Food frequency	**<=4**	**60 (30%)**	**23 (20%)**	**35 (33%)**	**37 (27%)**
	>4	142 (70%)	91 (80%)	70 (67%)	99 (73%)
P-value		0.8	**0.014***	0.3	0.6

3.9.3 Association of Ayurvedic dietary risk factors with NCDs

Regular usage of salty foods (*ati-lavana*) and heavy foods (*guru-annapaana*) is found to positively associated with hyperlipidemia. Regular usage of heavy foods (*guru-annapaana*) was 83% among the hypertensives. Also, among the diabetic population, 60% have regular intake of oily foods as in Table 3.8.

Table 3.8 Association of Ayurvedic dietary risk factors with NCD risk factors.

Risk factors		**Hypertension**	**Diabetes**	**Hyperlipidemia**	**Obesity**
Ati-lavana	Users	150 (74%)	85 (75%)	70 (67%)	103 (76%)
	Non	52 (26%)	29 (25%)	35 (33%)	33 (24%)
P-value		0.2	0.5	**0.003***	0.6
Guru-annapaana	Users	168 (83%)	97 (85%)	85 (81%)	117 (86%)
	Non	34 (17%)	17 (15%)	20 (19%)	19 (14%)
P-value		**0.013***	0.4	**0.023***	0.6
Snigdha ahara	Users	127 (63%)	68 (60%)	63 (60%)	87 (64%)
	Non	75 (37%)	46 (40%)	42 (40%)	49 (46%)
P-value		0.059	**0.04***	0.064	0.3

3.9.4 Association of Ayurvedic regimen risk factors with NCDs

Physical activity was found to be inadequate among the diabetic population, with only 28% have some sort of physical activity. Regular suppression of sleep and bowel suppressions were found among 64% and 83% of the participants with hyperlipidemia. Around 55% of the hypertensives have regular day sleep habits as in Table 3.9.

Table 3.9 Association of Ayurvedic regimen risk factors with NCD risk factors.

Risk factors		Hypertension	Diabetes	Hyperlipidemia	Obesity
Physical activity	Yes	29 (14%)	32 (28%)	15 (14%)	30 (22%)
	No	173 (86%)	82 (62%)	90 (86%)	106 (78%)
P-value		0.093	**<0.001***	0.3	0.092
Hunger suppression	Yes	85 (42%)	50 (44%)	36 (34%)	55 (40%)
	No	117 (58%)	74 (66%)	69 (64%)	81 (60%)
P-value		0.7	0.5	0.094	0.8
Sleep suppression	Yes	74 (37%)	32 (28%)	57 (64%)	48 (35%)
	No	128 (73%)	82 (72%)	48 (46%)	88 (65%)
P-value		**0.045***	0.3	**<0.001***	0.3
Bowel suppression	Yes	18 (8.9%)	13 (11%)	87 (83%)	10 (7.4%)
	No	184 (91.1%)	99 (89%)	18 (17%)	126 (92.6%)
P-value		0.7	0.4	**0.002***	0.3
Day-sleep	Yes	112 (55%)	59 (52%)	56 (53%)	61 (45%)
	No	90 (45%)	55 (48%)	49 (47%)	75 (55%)
P-value		**0.018***	0.6	0.4	0.2

3.10 Association between NCD risk factors and ayurvedic dietary and regimen risk factors- results of multivariate logistic regression analysis

Table 3.10 shows that individuals who have regular habit of sleep suppression and day sleep habits were 1.3 times and 1.7 times more likely to have hypertension compared to those without. Also, participants of age group of 50-54 years have 2.4 times more chance of developing hypertension compared to the age group 35-39 years.

Table 3.10 Results of multivariate logistic regression analysis for hypertension

Variables		**Crude OR (95% CI)**	**p-value**	**Adj OR (95% CI)**	**p-value**
Sleep suppression	No	Reference		Reference	
	Yes	1.5 (1.0-2.3)	0.046	1.3 (0.8-2.1)	0.196
Day sleep habits	No	Reference		Reference	
	Yes	1.6 (1.0-2.3)	0.018	1.7 (1.1-2.6)	0.01
Age-group	35-39	Reference		Reference	
	40-44	2.0 (1.0-4.2)	0.038	2.1 (1.0-4.3)	0.045
	45-49	2.0 (1.1-3.8)	0.021	1.7 (0.9-3.4)	0.087
	50-54	3.0 (1.6-5.8)	0.005	2.4 (1.2-4.8)	0.009
Education	>10^{th}	Reference		Reference	
	<10^{th}	3.3 (1.7-6.4)	<0.001	2.7 (1.3-5.5)	0.04
	10^{th}	1.6 (1.0-2.5)	0.031	1.4 (0.9-2.3)	0.092

Table 3.11 Results of multivariate logistic regression analysis for Diabetes

Variables		Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Physical Activity	Yes	Reference		Reference	
	No	2.4 (1.4-4.2)	0.001	2.2 (1.2-3.8)	0.004
sex	Female	Reference		Reference	
	Male	1.8 (1.1-2.9)	0.016	1.5 (0.9-2.7)	0.108
Occupation	Unemployed	Reference		Reference	
	Employed	1.4 (0.9-2.3)	0.07	1.1 (0.6-1.8)	0.652
Frequency of food intake	<=4	Reference		Reference	
	>4	1.8 (1.1-3.1)	0.015	1.9 (1.1-3.2)	0.016

Participants who have less physical activity have two times more chance of having diabetes mellitus when compared to those with physical activity as depicted in Table 3.11. Also, those having regular food intake frequency of more than four have almost twice more likely to have diabetes when compared to those having a food frequency of less than or equal to four.

Table 3.12 Results of multivariate logistic regression analysis for the outcome Hyperlipidemia.

Variables		Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Sleep suppression	No	Reference		Reference	
	Yes	2.2 (1.4-3.5)	0.001	1.9 (1.2-3.2)	0.007
Bowel suppression	No	Reference		Reference	
	Yes	2.7 (1.4-5.4)	0.003	2.7 (1.3-5.6)	0.005
Age-group	35-39	Reference		Reference	
	40-44	3.2 (1.1-8.6)	0.02	3.7 (1.3-10.4)	0.012
	45-49	3.7 (1.4-9.2)	0.005	3.6 (1.4-9.4)	0.007
	50-54	4.2 (1.6-10.8)	0.002	4.1 (1.5-10.8)	0.004
BMI	Non-obese	Reference		Reference	
	Obese	1.5 (0.9-2.5)	0.05	1.5 (0.9-2.5)	0.069

From Table 3.12, individuals having the habit of sleep suppression and bowel suppression are twice and almost thrice more likely to have dyslipidemia compared with those who don't have. Those who are obese are found to have 1.5 times more likely to have hyperlipidemia.

CHAPTER 4

DISCUSSIONS AND CONCLUSIONS

4.1 Discussions and findings:

This was a community based cross-sectional study among 410 middle-aged adults living in Nedumpana Grama Panchayat, Kollam, Kerala. This study explored the correlation between Ayurvedic dietary beliefs in food intake and non-communicable disease (NCD) risk factors like hypertension, diabetes mellitus, dyslipidaemia and obesity. It was found that the practice of Ayurvedic dietary and regimen risk factors are high among the study population. The dietary risk factors considered were regular intake of salty foods (*ati-lavana sevanam*), sour foods (*ati-amla sevanam*), hard to digest foods (*guru-annapaana*), oily foods (*snigdha-annapaana*), uncongenial foods (*asaathmya aahara*), frequency of food intake per day(Varshney and Verma, 2018) and the regimen risk factors considered were sedentary life style (less physical activity), suppressing natural urges of the body regularly, lack of daily external oily massage and waking up timings(Central Council for Research in Ayurvedic Sciences (India), 2018). We found that some of the risk factors proposed by Ayurveda have association with the status of NCDs in this rural setting. My study also documents the status of NCDs in the study population through bio-chemical tests like fasting blood sugar (FBS) and serum cholesterol and through other physical measurements.

In my study regarding the dietary habits, 77.1 percent have regular use of salty foods (*ati-lavana*), 80.5 percent have regular use of sour foods (*ati-amla*), 87.3 percent have regular use of heavy foods (*guru-annapaana*), 67.3 percent have regular use of oily foods (*snigdha-annapaana*), 16.3 percent have regular use of uncongenial foods (*asaathmya*) and 70.7 percent have a food eating frequency of more than 4 times a day. In the case of

regimen risk factors, 17.6 percent have some sort of physical activity, 9.5 percent, 41.2 percent, 31.9 percent have regular habit of suppressing bowel, hunger and sleep urges respectively. 76.8 percent have regular external oil massage habits, 40 percent have the habit of waking up in Brahma Muhurta and 49.5 percent have regular day sleep habits. A gender wise variation in usage and practice of dietary and regimen risk factors were not found. The participants with selected NCD risk factors were found through self-reporting, bio-chemical tests values for FBS, serum cholesterol, systolic or diastolic BP values and body mass index (BMI). The overall prevalence of selected NCDs in rural Kerala was 33.9 percent which is quite higher than 28.5 percent(Kerala | Cadi, 2012.).

Here majority of participants with hypertension have regular intake of heavy foods (83%). This is similar to what we have seen in previous studies in India, which gives a positive relationship between heavy foods and hypertension(Kar and Khandelwal, 2015). Regular day sleep habits have been found among 55 percent of hypertensives, which is not recommended by Ayurvedic *dinacharya* (daily regimen).(Kumar et al., 2020). The trend of disease tends to be more among those with higher age. Participants who have higher education are found to be less affected by hypertension, which is similar to what we have seen in the study which evaluated socio-economic position and hypertension in rural setting(Thrift et al., 2020).

Reduced meal frequency per day has positive implications on control of type-2 diabetes(Edavalath, 2018). Despite the evidence on diabetes control, relatively low-rate adherence to the reduced meal frequency (less than or equal to four) of diet per day was reported in the present study (29%). This is consistent with another study finding (Prakash et al., 2020), which proposes a food intake at particular timings rather than eating frequently. In our setting, 60 percent of diabetic people have heavy food intake regularly, which has an association with diabetes as in US(Liese et al., 2009).

In the present study, less than one-fifth of individuals were adherent to physical activity. The findings are consistent with results from similar studies conducted in other settings(Esteghamati et al., 2011). The diabetic control among these participants were found to be poor, which is similar to studies conducted in Spain(Brugnara et al., 2016). Here also the people with diabetes mellitus, 62 percent have less or no physical activity. Our findings indicate the need for an immediate action regarding health education to create awareness regarding importance of dietary modification and enhanced physical activity.

In our study, low rate of adherence to reduced regular salty food intake was found among hyperlipidemia people of 33 percent, which is consistent with the study conducted in Korea(Lee and Cho, 2016). Studies show that, excessive intake of heavy foods especially carbohydrate diet enhances the chances of getting hyperlipidemia(Chaudhari et al., 2017), which is consistent with our findings.

In our study, 83 percent participants with hyperlipidemia are having regular suppression of defaecation urge. These findings are consistent with the study that established this urge suppression as a risk for developing coronary artery disease (Jadhav and Waghulade, 2021). Elderly aged group are found to be more obese compared to younger age. In a study conducted in Varanasi, age progression is associated with increased adiposity(Sarvottam et al., 2020). Our study findings stress the need for developing specific educational programs for improvement of knowledge regarding dietary control, practice of wholesome regimen and its importance in control of non-communicable diseases like hypertension, diabetes, dyslipidaemia and obesity.

Adherence to Ayurvedic dietary and regimen risk factors is an independent predictor of control of NCDs. In our study, blood pressure control was relatively less in individuals who were regularly consuming heavy foods and practicing day sleep habits. Diabetic

participants were found more adherent to increased meal frequency and less physical activity and hyperlipidemia people were found sticking to regular sleep-bowel suppression and salty-heavy foods. Lifestyle modification has great capacity to control these NCDs and reduce the risk of further complications when combined with pharmacological intervention.(Arena et al., 2015). Middle-aged people are to be given prime importance in this epidemiological transition stage, as it could have serious implication on their health status at later times. (Syauqy et al., 2018).

4.2 Strengths of the study

- There are limited studies on NCD risk factors in Kerala using Ayurvedic dietary and regimen practices along with a standard tool like WHO step wise approach for surveillance of NCD risk factors.
- Data collection was done by a single investigator. So, the chance of inter observer bias was eliminated.

4.3 Limitations of the study

- Self-reported dietary and regimen practices are subjected to recall and response bias.
- Data collection was done using cross-sectional survey. The associations observed does not infer causality.
- Among the population being studied, male participation was inadequate (23.5%).

5. CONCLUSION

In the study the correlation between selected Ayurvedic beliefs in food intake and selected non-communicable disease risk factors like hypertension, diabetes mellitus, dyslipidemia and obesity has been demonstrated. The practice of dietary and regimen risk factors proposed by Ayurveda are found to be high among the participants, who were apparently healthy. The study points to correlations between identified ayurvedic risk factors and many biochemical risk factors of NCDs, though many are not statistically significant. Some of these practices are enacted as a routine, as most of the participants were not much aware of ill effects of these in the long run. Most of these identified risk factors can be modified with lifestyle interventions. Further, compliance to preventive practices leads to better control of blood pressure, blood sugar and cholesterol levels and BMI. Interventions to improve the regular practice of dietary and regimen stipulations in alternative systems could have significant public health impact in achieving better control rates of non-communicable diseases in Kerala. All approaches are shifting towards preventive perspectives rather than treating the disease. So, it is the necessity to adopt this holistic approach, which could bring significant changes in the health status of the population. Dietary practices and regimens proposed by Ayurveda could be used to identify persons with NCD risk factors at an earlier stage. The regular practice of dietary and regimen stipulations in Ayurveda would be beneficial in the control of NCD risk factors. Urgent measures should be taken to enhance the physical activity among people. The initiatives can come from LSGs, like setting up playgrounds or open spaces, etc. Measures to be taken to reduce the frequency of food intake, limit to three meals per day and the intervals between meals (including snacks) should be at least three hours.

6. BIBLIOGRAPHY

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- WHO STEPwise approach to chronic disease risk factor surveillance-v2.1

7. ANNEXURES

7.1: Interview schedule (English)

STRUCTURED QUESTIONNAIRE FOR INTERVIEW

Section-1 : General Information

1.1	Participant ID	
1.2	Date of Interview	
1.3	Time	
1.4	Cluster ID	
1.5	Consent form signed	YES/ NO

Section-2: Demographic information

2.1	Age completed in years	
2.2	Sex	Male/Female/Others
2.3	Number of years of formal schooling?	
2.4	What is your occupation?	• Student 1 • Self-employed- farmer/shop keepers/ mason/ carpenter/labourer/drivers 2 • Govt employee 3 • Non govt employee- IT sector/ other office jobs/ health workers/ accountants /others 4 • Home maker 5

		• Retired 6 • Unemployed 88
2.5	What is your marital status?	• Unmarried 1 • Married 2 • Divorced 3 • Separated 4 • Widowed 5
2.6	Socio-economic status based on ration card	• White Card 1 • Yellow Card 2 • Red Card 3 • Blue Card 4 • No ration card 88

Section-3: Physical measurements

3.1	Height (cm)	
3.2	Weight (kg)	
3.3	BP	• Reading 1- systolic/diastolic • Reading 2- systolic /diastolic • Reading 3- systolic/diastolic
3.4	Pulse	/Min

Section-4: Clinical history

CORE: History of Raised Blood Pressure		
Question	**Response**	**Code**
Have you ever had your blood pressure measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to H6*	H1
Have you ever been told by a doctor or other health worker that you have raised blood	Yes 1 No 2 *If No, go to H6*	H2a
Were you first told in the past 12 months?	Yes 1 No 2	H2b

In the past two weeks, have you taken any drugs (medication) for raised blood pressure prescribed by a doctor or other health worker?	Yes No	1 2		H3
Have you ever seen a traditional healer for raised blood pressure or hypertension?	Yes No	1 2		H4
Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes No	1 2		H5

CORE: History of Diabetes				
Have you ever had your blood sugar measured by a doctor or other health worker?	Yes No	1 2	*If No, go to H12*	H6
Have you ever been told by a doctor or other health worker that you have raised blood sugar or	Yes No	1 2	*If No, go to H12*	H7a
Were you first told in the past 12 months?	Yes No	1 2		H7b
In the past two weeks, have you taken any drugs (medication) for diabetes prescribed by a doctor or other health worker?	Yes No	1 2		H8
Are you currently taking insulin for diabetes prescribed by a doctor or other health worker?	Yes No	1 2		H9
Have you ever seen a traditional healer for diabetes or raised blood sugar?	Yes No	1 2		H10
Are you currently taking any herbal or traditional remedy for your diabetes?	Yes No	1 2		H11

CORE: History of Raised Total Cholesterol				
Question	**Response**			**Code**
Have you ever had your cholesterol (fat levels in your blood) measured by a doctor or other health worker?	Yes No	1 2	*If No, go to H17*	H12
Have you ever been told by a doctor or other health worker that you have raised cholesterol?	Yes No	1 2	*If No, go to H17*	H13a

Were you first told in the past 12 months?	Yes 1 No 2	H13b
In the past two weeks, have you taken any oral treatment (medication) for raised total cholesterol prescribed by a doctor or other health worker?	Yes 1 No 2	H14
Have you ever seen a traditional healer for raised cholesterol?	Yes 1 No 2	H15
Are you currently taking any herbal or traditional remedy for your raised cholesterol?	Yes 1 No 2	H16

CORE: History of Cardiovascular Diseases		
Have you ever had a heart attack or chest pain from heart disease (angina) or a stroke (cerebrovascular accident or incident)?	Yes 1 No 2	H17
Are you currently taking aspirin regularly to prevent or treat heart disease?	Yes 1 No 2	H18
Are you currently taking statins (Lovastatin/Simvastatin/Atorvastatin or any other statin) regularly to prevent or treat heart disease?	Yes 1 No 2	H19

Section-5: Behavioural Measurements

Tobacco use

Question	Response	Code
Do you **currently** smoke any **tobacco** products, such as cigarettes, cigars or pipes? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T8*	T1
Do you currently smoke tobacco products **daily**?	Yes 1 No 2	T2
How old were you when you **first started** smoking?	Age (years) Don't know 77 ⌊_⌋⌊_⌋ *If Known, go to T5a/T5aw*	T3

Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77*	In Years ⌊_⌋⌊_⌋ *If Known, go to T5a/T5aw*	T4a
	OR in Months ⌊_⌋⌊_⌋ *If Known, go to T5a/T5aw*	T4b
	OR in Weeks ⌊_⌋⌊_⌋	T4c
On average, **how many** of the following products do you smoke **each day/week?** *(IF LESS THAN DAILY, RECORD WEEKLY)* *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 7777*	DAILY↓ WEEKLY↓	
	Manufactured cigarettes ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T5a/T5aw
	Hand-rolled cigarettes ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T5b/T5bw
	Pipes full of tobacco ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T5c/T5cw
	Cigars, cheroots, cigarillos ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T5d/T5dw
	Number of Shisha sessions ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T5e/T5ew
	Other ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *If Other, go to T5other, else go to T6*	T5f/T5fw
	Other (please specify): ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T5other/ T5otherw
During the past 12 months, have you tried to **stop smoking**?	Yes 1 No 2	T6
During any visit to a doctor or other health worker in the past 12 months, were you advised to quit smoking tobacco?	Yes 1 *If T2=Yes, go to T12; if T2=No, go to T9* No 2 *If T2=Yes, go to T12; if T2=No, go to T9* No visit during the past 12 months 3 *If T2=Yes, go to T12; if T2=No, go to T9*	T7
In the past, did you **ever smoke** any tobacco products? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T12*	T8
In the past, did you **ever** smoke **daily**?	Yes 1 *If T1=Yes, go to T12, else go to T10* No 2 *If T1=Yes, go to T12, else go to T10*	T9

How old were you when you **stopped** smoking?	Age (years) Don't Know 77 ⌊_⌋⌊_⌋ *If Known, go to T12*	T10
How **long ago** did you stop smoking? *(RECORD ONLY 1, NOT ALL 3)* *Don't Know 77*	Years ago ⌊_⌋⌊_⌋ *If Known, go to T12*	T11a
	OR Months ago ⌊_⌋⌊_⌋ *If Known, go to T12*	T11b
	OR Weeks ago ⌊_⌋⌊_⌋	T11c
Do you **currently use** any **smokeless tobacco** products such as *[snuff, chewing tobacco, betel]*? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T15*	T12
Do you **currently use smokeless tobacco** products **daily?**	Yes 1 No 2 *If No, go to T14aw*	T13
On average, how many **times a day/week** do you use …. *(IF LESS THAN DAILY, RECORD WEEKLY)*	DAILY↓ WEEKLY↓	
	Snuff, by mouth ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14a/ T14aw

(RECORD FOR EACH TYPE, USE SHOWCARD) *Don't Know 7777*	Snuff, by nose	⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14b/ T14bw
	Chewing tobacco	⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14c/ T14cw
	Betel, quid	⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	T14d/ T14dw
	Other	⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *If Other, go to T14other, if T13=No, go to T16, else go to T17*	T14e/ T14ew
	Other (please specify):	⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *If T13=No, go to T16, else go to T17*	T14other/ T14otherw
In the **past**, did you **ever use** smokeless tobacco products such as *[snuff, chewing tobacco, or betel]*?	Yes 1 No 2 *If No, go to T17*		T15
In the **past**, did you **ever use** smokeless tobacco products such as *[snuff, chewing tobacco, or betel]* **daily**?	Yes 1 No 2		T16
During the past 30 days, did someone smoke **in your home**?	Yes 1 No 2		T17
During the past 30 days, did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office)?	Yes 1 No 2 Don't work in a closed area 3		T18

Alcohol consumption

Question	Response	Code
Have you **ever** consumed any alcohol such as beer, wine, spirits or *[add other local examples]*? *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes 1 No 2 *If No, go to A16*	A1
Have you consumed any alcohol within the **past 12 months**?	Yes 1 *If Yes, go to A4* No 2	A2
Have you stopped drinking due to health reasons, such as a negative impact on your health or on the advice of your doctor or other health worker?	Yes 1 *If Yes, go to A16* No 2 *If No, go to A16*	A3
During the past 12 months, **how frequently** have you had at least one standard alcoholic drink? *(READ RESPONSES, USE SHOWCARD)*	Daily 1 5-6 days per week 2 3-4 days per week 3 1-2 days per week 4 1-3 days per month 5 Less than once a month 6 Never 7	A4

Have you consumed any alcohol within the **past 30 days**?	Yes 1 No 2 *If No, go to A13*	A5
During the past 30 days, on how many **occasions** did you have at least one standard alcoholic drink? *(USE SHOWCARD)*	Number Don't know 77 └┴┘ *If Zero, go to A13*	A6
During the past 30 days, when you drank alcohol, how many **standard drinks on average** did you have during one drinking occasion?	Number Don't know 77 └┴┘	A7
During the past 30 days, what was the **largest number** of standard drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77 └┴┘	A8
During the past 30 days, how many times did you have **six or more** standard drinks in a single drinking occasion?	Number of times Don't Know 77 └┴┘	A9
During each of the **past 7 days**, how many standard drinks did you have each day? *(USE SHOWCARD)* *Don't Know 77*	Monday └┴┘	A10a
	Tuesday └┴┘	A10b
	Wednesday └┴┘	A10c
	Thursday └┴┘	A10d
	Friday └┴┘	A10e
	Saturday └┴┘	A10f
	Sunday └┴┘	A10g

Question	Response	Code
During the **past 7 days**, did you consume any **homebrewed** alcohol, any alcohol **brought over the border/from another country**, any alcohol **not intended for drinking** or other **untaxed** alcohol? *[AMEND ACCORDING TO LOCAL CONTEXT]* *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to A13*	A11
On average, **how many standard drinks** of the following did you consume **during the past 7 days**? *[INSERT COUNTRY-SPECIFIC EXAMPLES]*	Homebrewed spirits, e.g. moonshine └┴┘	A12a
	Homebrewed beer or wine, e.g. beer, palm or fruit wine └┴┘	A12b
	Alcohol brought over the border/from another country └┴┘	A12c

(USE SHOWCARD) *Don't Know 77*	Alcohol not intended for drinking, e.g. alcohol-based medicines, perfumes, after shaves ⌊_⌋⌊_⌋⌊_⌋	A12d
	Other untaxed alcohol in the country ⌊_⌋⌊_⌋⌊_⌋	A12e

During the **past 12 months,** how often have you found that you were not able to stop drinking once you had started?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A13
During the **past 12 months,** how often have you failed to do what was normally expected from you because of drinking?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A14
During the **past 12 months,** how often have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Daily or almost daily 1 Weekly 2 Monthly 3 Less than monthly 4 Never 5	A15
During the **past 12 months**, have you had family problems or problems with your partner due to **someone else's** drinking?	Yes, more than monthly 1 Yes, monthly 2 Yes, several times but less than monthly 3 Yes, once or twice 4 No 5	A16

Diet

Question	Response	Code
In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)*	Number of days ⌊_⌋⌊_⌋⌊_⌋ Don't Know 77 *If Zero days, go to D3*	D1
How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD)*	Number of servings ⌊_⌋⌊_⌋⌊_⌋ Don't Know 77	D2
In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)*	Number of days ⌊_⌋⌊_⌋⌊_⌋ Don't Know 77 *If Zero days, go to D5*	D3
How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)*	Number of servings ⌊_⌋⌊_⌋⌊_⌋ Don't know 77	D4

How important to you is **lowering the salt** in your diet?	Very important 1 Somewhat important 2 Not at all important 3 Don't know 77	D5
Do you think that too much salt or salty sauce in your diet could cause a **health problem**?	Yes 1 No 2 Don't know 77	D6

Physical Activity

Question	Response
Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *[carrying or lifting heavy loads, digging or construction work]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 4*
In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌊__⌋
How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins
Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking *[or carrying light loads]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 7*
In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌊__⌋
How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins
How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins

Section-6: 24-Hour Dietary Assessment Tool

Date	Time	Food item	Quantity in local terms*	Quantity in measurable terms	Total Amount of Energy in food

***Quantity in local terms**

- 1 cup = 250ml
- 1 kuti= 300g
- 1 chiratta = 150g
- 1 ladle(thavi)= ½ cup
- 1 glass= 250ml
- 1 teaspoon= 5.69g
- 1 tablespoon= 17.07g
- Rice ladle(thavi)= 124g

Section-7- Assessment of practice of unwholesome diets and regimens- Checklist

Food articles/regimens	**Examples in contemporary settings**	Remarks
Atilavana(excessive intake of salt)	Salt predominant foods like pickles, papad, chips, bhelpuri, namkeen used in excess quantities.	
Atiamla(excessive intake of sour foods)	Fermented products, pickles, bhelpuri, sour fruit juices, sauces like tomato sauce, excess intake of preserved foods, curd, buttermilk, lemon juice, vinegar, alcohol, sauce, squashes.	
Virudhahara (Incompatible food	• Sprouted vegetables/grains with meat, • milk with meat, honey with meat, black • gram with meat, lotus stem with meat,	

	• radish with meat, jaggery with meat, • milk or honey with leafy vegetables, • curd with chicken, honey heated in any • form or taken with hot water, alcohol • with kheer, fish with jaggery or sugar	
Guru annapana (Hard to digest foods)	Pizza, cheese mixed foods, bakery products, kidney beans, paneer etc, food items prepared m ainly from black gram such as dosa, idli, vada; beef, pork; food prepared from flour. Regular intake of meat products Intake of milk shakes, kheer etc.	
Snigdha Annapana (oily/unctuous foods)	Excessively oily foods such as biriyani, fried oily foods, meat soups, sweets made of excess ghee, milk etc such as kheer	
Ati dravapana (excessive intake of liquid foods)	Drinking excess quantity of water/ juices/madya/ soft drinks/ milk / liquid foods like rasam/sambhar more than needed for the body.	
Sneha ati sevanam (excessive consumption of oil and fats)	Excessive intake of ghee for medical purposes or as part of diet.	
Asatmya ahara (Uncongenial foods)	Foods which are not suitable to prakriti, Desa (native to the place) such as fruits of foreign origin, eating food which is not native to the area such as Chinese food, pasta or pizza, soybean etc	

Gramya - anupa audaka mamsa with milk (domestic, marshy animal meat with milk	Non vegetarian food with milk, ice cream along with non-vegetarian food, milk products with meat etc. Dishes like butter chicken	
Day sleep	Habit of regularly indulging in day sleep other than greeshma ritu (summer)	
Vega dharana	Suppression of natural urges • Flatus • Faeces • Urine • Sneezing • Thirst • Hunger • Sleep • Cough • Breathing on exertion. • Yawning • Tears • Vomiting	
Wake up time		
Oral hygiene		
Abhyanga (oil massage)	With medicated oil/not	
Vyayama	Duration	

Section-8: Biochemical Test values

FBS	
Total Cholesterol	

7.2- Interview schedule (Malayalam)

അഭിമുഖത്തിനുള്ള ഘടനാപരമായ ചോദ്യാവലി

വിഭാഗം-1 : പൊതുവിവരങ്ങൾ

1.1	പങ്കെടുക്കുന്ന ആളിന്റെ ഐ.ഡി	
1.2	അഭിമുഖ തീയതി	
1.3	സമയം	
1.4	ക്ലസ്റ്റർ നമ്പർ	
1.5	സമ്മതപത്രം ഒപ്പിട്ടിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല

വിഭാഗം-2: ജനസംഖ്യാപരമായ വിവരങ്ങൾ

2.1	പ്രായം	
2.2	ലൈംഗികത	പുരുഷൻ/സ്ത്രീ/മറ്റുള്ളവർ
2.3	ഔപചാരിക സ്കൂൾ വിദ്യാഭ്യാസത്തിന്റെ വർഷങ്ങളുടെ എണ്ണം?	
2.4	നിങ്ങളുടെ തൊഴിൽ എന്താണ്?	• വിദ്യാർത്ഥി 1 · സ്വയം തൊഴിൽ- കർഷകൻ/കട നടത്തുന്നയാൾ/ മേസൺ/ ആശാരി/തൊഴിലാളി/ഡ്രൈവർമാർ 2 · സർക്കാർ ജീവനക്കാരൻ 3 · സർക്കാരിതര ജീവനക്കാരൻ- ഐടി മേഖല/ മറ്റ് ഓഫീസ് ജോലികൾ/ ആരോഗ്യ

		പ്രവർത്തകർ/ അക്കൗണ്ടന്റുമാർ / മറ്റുള്ളവർ 4 · ഹോം മേക്കർ 5 · വിരമിച്ച 6 · തൊഴിലില്ലാത്തവർ 88
2.5	താങ്കളുടെ വൈവാഹിക നില എന്താണ്?	• അവിവാഹിതർ 1 · വിവാഹം 2 · വിവാഹമോചനം 3 · വേർതിരിച്ചത് 4 · വിധവ 5
2.6	റേഷൻ കാർഡിനെ അടിസ്ഥാനമാക്കിയുള്ള സാമൂഹിക-സാമ്പത്തിക നില?	• വെള്ള കാർഡ് 1 · മഞ്ഞ കാർഡ് 2 · ചുവപ്പ് കാർഡ് 3 · നീല കാർഡ് 4 · റേഷൻ കാർഡ് ഇല്ല 88

വിഭാഗം-3: ശാരീരിക അളവുകൾ

3.1	ഉയരം (സെ.മീ.)	
3.2	ഭാരം (കിലോ)	
3.3	ബിപി	• റീഡിംഗ് 1- സിസ്റ്റോളിക്/ഡയസ്റ്റോളിക് · റീഡിംഗ് 2- സിസ്റ്റോളിക് / ഡയസ്റ്റോളിക് · റീഡിംഗ് 3- സിസ്റ്റോളിക്/ഡയസ്റ്റോളിക്
3.4	പൾസ് /മിനിറ്റ്	

വിഭാഗം-4: ക്ലിനിക്കൽ ഹിസ്റ്ററി

ഉയർന്ന രക്തസമ്മർദ്ദത്തിന്റെ ചരിത്രം

4.1	നിങ്ങൾ എപ്പോഴെങ്കിലും നിങ്ങളുടെ രക്തസമ്മർദ്ദം ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യപ്രവർത്തകരോ അളന്നിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല ഇല്ലെങ്കിൽ, അടുത്ത വിഭാഗത്തിലേക്ക് പോകുക
	നിങ്ങൾക്ക് രക്തസമ്മർദ്ദം വർദ്ധിച്ചതായി ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യപ്രവർത്തകരോ നിങ്ങളോട് എപ്പോഴെങ്കിലും പറഞ്ഞിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല ഇല്ലെങ്കിൽ, അടുത്ത വിഭാഗത്തിലേക്ക് പോകുക
4.2	കഴിഞ്ഞ 12 മാസത്തിനിടെ നിങ്ങളോട് ആദ്യം പറഞ്ഞതാണോ?	ഉണ്ട്/ഇല്ല
4.3	കഴിഞ്ഞ രണ്ടാഴ്ചയ്ക്കുള്ളിൽ, ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യ പ്രവർത്തകരോ നിർദ്ദേശിച്ച രക്തസമ്മർദ്ദം വർദ്ധിപ്പിക്കുന്നതിന് നിങ്ങൾ എന്തെങ്കിലും മരുന്നുകൾ (മരുന്ന്) കഴിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
4.4	ഉയർന്ന രക്തസമ്മർദ്ദത്തിനു ഒരു പരമ്പരാഗത വൈദ്യനെ നിങ്ങൾ എപ്പോഴെങ്കിലും കണ്ടിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
4.5	നിങ്ങളുടെ വർദ്ധിച്ച രക്തസമ്മർദ്ദത്തിന് നിങ്ങൾ നിലവിൽ ഏതെങ്കിലും ഹെർബൽ അല്ലെങ്കിൽ പരമ്പരാഗത പ്രതിവിധി കഴിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല

പ്രമേഹത്തിന്റെ ചരിത്രം

4.6	നിങ്ങൾ എപ്പോഴെങ്കിലും നിങ്ങളുടെ രക്തത്തിലെ പഞ്ചസാരയുടെ അളവ് ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യ പ്രവർത്തകരോ അളന്നിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല ഇല്ലെങ്കിൽ, അടുത്ത വിഭാഗത്തിലേക്ക് പോകുക
4.7	നിങ്ങൾക്ക് രക്തത്തിലെ പഞ്ചസാരയോ പ്രമേഹമോ വർദ്ധിച്ചതായി ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യപ്രവർത്തകരോ നിങ്ങളോട് എപ്പോഴെങ്കിലും പറഞ്ഞിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല ഇല്ലെങ്കിൽ, അടുത്ത വിഭാഗത്തിലേക്ക് പോകുക
4.8	കഴിഞ്ഞ 12 മാസത്തിനിടെ നിങ്ങളോട് ആദ്യം പറഞ്ഞതാണോ?	ഉണ്ട്/ഇല്ല

4.9	കഴിഞ്ഞ രണ്ടാഴ്ചയ്ക്കുള്ളിൽ, ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യ പ്രവർത്തകരോ നിർദ്ദേശിച്ച പ്രമേഹത്തിന് നിങ്ങൾ എന്തെങ്കിലും മരുന്നുകൾ (മരുന്ന്) കഴിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
4.10	ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യ പ്രവർത്തകരോ നിർദ്ദേശിക്കുന്ന പ്രമേഹത്തിന് നിങ്ങൾ നിലവിൽ ഇൻസുലിൻ ഉപയോഗിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല
4.11	പ്രമേഹത്തിനുള്ള പരമ്പരാഗത വൈദ്യനെ നിങ്ങൾ എപ്പോഴെങ്കിലും കണ്ടിട്ടുണ്ടോ അല്ലെങ്കിൽ രക്തത്തിലെ പഞ്ചസാരയുടെ വർദ്ധനവ്?	ഉണ്ട്/ഇല്ല
4.12	നിങ്ങളുടെ പ്രമേഹത്തിന് നിങ്ങൾ നിലവിൽ ഏതെങ്കിലും ഹെർബൽ അല്ലെങ്കിൽ പരമ്പരാഗത പ്രതിവിധി കഴിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല

<u>രക്തത്തിലെ കൊഴുപ്പിന്റെ അളവ് വർധിച്ചതിന്റെ ചരിത്രം</u>

4.13	നിങ്ങൾ എപ്പോഴെങ്കിലും നിങ്ങളുടെ കൊളസ്ട്രോൾ (രക്തത്തിലെ കൊഴുപ്പിന്റെ അളവ്) ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യ പ്രവർത്തകരോ അളന്നിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല ഇല്ലെങ്കിൽ, അടുത്ത വിഭാഗത്തിലേക്ക് പോകുക
4.14	നിങ്ങൾക്ക് കൊളസ്ട്രോൾ വർദ്ധിപ്പിച്ചതായി ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യപ്രവർത്തകരോ നിങ്ങളോട് എപ്പോഴെങ്കിലും പറഞ്ഞിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല ഇല്ലെങ്കിൽ, അടുത്ത വിഭാഗത്തിലേക്ക് പോകുക
4.15	കഴിഞ്ഞ 12 മാസത്തിനിടെ നിങ്ങളോട് ആദ്യം പറഞ്ഞതാണോ?	ഉണ്ട്/ഇല്ല
4.16	കഴിഞ്ഞ രണ്ടാഴ്ചയ്ക്കുള്ളിൽ, ഒരു ഡോക്ടറോ മറ്റ് ആരോഗ്യപ്രവർത്തകരോ നിർദ്ദേശിച്ചിട്ടുള്ള മൊത്തം കൊളസ്ട്രോളിന് എന്തെങ്കിലും വാക്കാലുള്ള ചികിത്സ (മരുന്ന്) നിങ്ങൾ കഴിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
4.17	കൊളസ്ട്രോൾ വർധിപ്പിക്കുന്നതിനുള്ള ഒരു പരമ്പരാഗത വൈദ്യനെ നിങ്ങൾ എപ്പോഴെങ്കിലും കണ്ടിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല

4.18	നിങ്ങളുടെ വർദ്ധിച്ച കൊളസ്ട്രോളിന് നിങ്ങൾ നിലവിൽ ഏതെങ്കിലും ഹെർബൽ അല്ലെങ്കിൽ പരമ്പരാഗത പ്രതിവിധി കഴിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല

ഹൃദയ സംബന്ധമായ അസുഖങ്ങളുടെ ചരിത്രം

4.19	നിങ്ങൾക്ക് എപ്പോഴെങ്കിലും ഹൃദയാഘാതം അല്ലെങ്കിൽ ഹൃദ്രോഗം (ആൻജീന) അല്ലെങ്കിൽ സ്ട്രോക്ക് (സെറിബ്രോവാസ്കുലർ അപകടം അല്ലെങ്കിൽ സംഭവം) എന്നിവയിൽ നിന്ന് നെഞ്ചുവേദന ഉണ്ടായിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
4.20	ഹൃദ്രോഗം തടയുന്നതിനോ ചികിത്സിക്കുന്നതിനോ നിങ്ങൾ നിലവിൽ ആസ്പിരിൻ പതിവായി കഴിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല
4.21	ഹൃദ്രോഗം തടയുന്നതിനോ ചികിത്സിക്കുന്നതിനോ നിങ്ങൾ നിലവിൽ സ്റ്റാറ്റിനുകൾ (ലോവസ്റ്റാറ്റിൻ/സിംവസ്റ്റാറ്റിൻ/അറ്റോർവാസ്റ്റാറ്റിൻ അല്ലെങ്കിൽ മറ്റേതെങ്കിലും സ്റ്റാറ്റിൻ) പതിവായി കഴിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല

വിഭാഗം-5: പെരുമാറ്റ അളവുകൾ

പുകയില ഉപയോഗം

5.1	നിങ്ങൾ നിലവിൽ സിഗരറ്റ്, ചുരുട്ട് അല്ലെങ്കിൽ പൈപ്പുകൾ പോലെയുള്ള ഏതെങ്കിലും പുകയില ഉൽപ്പന്നങ്ങൾ വലിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.2	നിങ്ങൾ നിലവിൽ ദിവസവും പുകയില ഉൽപന്നങ്ങൾ വലിക്കാറുണ്ടോ?	ഉണ്ട്/ഇല്ല
	നിങ്ങൾ ആദ്യമായി പുകവലി തുടങ്ങിയപ്പോൾ നിങ്ങൾക്ക് എത്ര വയസ്സായിരുന്നു?	പ്രായം (വർഷങ്ങൾ) അറിയില്ല 77
	എത്ര കാലം മുമ്പായിരുന്നു എന്ന്	വർഷങ്ങളിൽ
5.3	ഓർക്കുന്നുണ്ടോ?	അല്ലെങ്കിൽ ആഴ്ചകളിൽ
5.4	ശരാശരി, ഓരോ	നിർമ്മിച്ച സിഗരറ്റ്
	ദിവസവും/ആഴ്ചയിൽ ഇനിപ്പറയുന്ന	കൈകൊണ്ട് ചുരുട്ടുന്ന സിഗരറ്റുകൾ

	ഉൽപ്പന്നങ്ങളിൽ എത്രയെണ്ണം നിങ്ങൾ പുകവലിക്കുന്നു?	പൈപ്പുകൾ നിറയെ പുകയില
		ചുരുട്ട്, ചെറുട്ട്, സിഗറിലോസ്
		ഷിഷ സെഷനുകളുടെ എണ്ണം
		മറ്റുള്ളവ
5.5	കഴിഞ്ഞ 12 മാസങ്ങളിൽ, നിങ്ങൾ പുകവലി നിർത്താൻ ശ്രമിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.6	കഴിഞ്ഞ 12 മാസത്തിനിടെ ഒരു ഡോക്ടറെയോ മറ്റ് ആരോഗ്യ പ്രവർത്തകരെയോ സന്ദർശിക്കുമ്പോൾ, പുകവലി ഉപേക്ഷിക്കാൻ നിങ്ങളോട് നിർദ്ദേശിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.7	പണ്ട്, നിങ്ങൾ എപ്പോഴെങ്കിലും പുകയില ഉൽപന്നങ്ങൾ വലിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.8	പണ്ട്, നിങ്ങൾ എപ്പോഴെങ്കിലും ദിവസവും പുകവലിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.9	നിങ്ങൾ നിലവിൽ പുകയില്ലാത്ത പുകയില ഉൽപന്നങ്ങളായ [മൂക്കത്ത്, ചവയ്ക്കുന്ന പുകയില, വെറ്റില] ഉപയോഗിക്കുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല

<u>മദ്യത്തിന്റെ ഉപഭോഗം</u>

5.10	നിങ്ങൾ എപ്പോഴെങ്കിലും ബിയർ, വൈൻ, സ്പിരിറ്റ് അല്ലെങ്കിൽ [മറ്റ് പ്രാദേശിക ഉദാഹരണങ്ങൾ ചേർക്കുക] പോലുള്ള ഏതെങ്കിലും മദ്യം കഴിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.11	കഴിഞ്ഞ 12 മാസത്തിനുള്ളിൽ നിങ്ങൾ എന്തെങ്കിലും മദ്യം കഴിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.12	നിങ്ങളുടെ ആരോഗ്യത്തെ പ്രതികൂലമായി ബാധിക്കുന്നതോ നിങ്ങളുടെ ഡോക്ടറുടെയോ മറ്റ് ആരോഗ്യ പ്രവർത്തകരുടെയോ ഉപദേശം പോലെയുള്ള ആരോഗ്യ കാരണങ്ങളാൽ നിങ്ങൾ മദ്യപാനം നിർത്തിയിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല

5.13	കഴിഞ്ഞ 12 മാസത്തിനിടയിൽ, എത്ര തവണ നിങ്ങൾ ഒരു സാധാരണ മദ്യമെങ്കിലും കഴിച്ചിട്ടുണ്ട്?	• ദിവസവും 1 • ആഴ്ചയിൽ 5-6 ദിവസം 2 • ആഴ്ചയിൽ 3-4 ദിവസം 3 • ആഴ്ചയിൽ 1-2 ദിവസം 4 • പ്രതിമാസം 1-3 ദിവസം 5 • മാസത്തിൽ ഒരിക്കലെങ്കിലും 6 • ഒരിക്കലും 7
5.14	കഴിഞ്ഞ 30 ദിവസത്തിനുള്ളിൽ നിങ്ങൾ എന്തെങ്കിലും മദ്യം കഴിച്ചിട്ടുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.15	കഴിഞ്ഞ 30 ദിവസങ്ങളിൽ, എത്ര തവണ നിങ്ങൾ ഒരു സാധാരണ മദ്യമെങ്കിലും കഴിച്ചു?	• നമ്പർ • അറിയില്ല 77
5.16	കഴിഞ്ഞ 30 ദിവസങ്ങളിൽ, നിങ്ങൾ മദ്യം കഴിച്ചപ്പോൾ, ഒരു മദ്യപാന അവസരത്തിൽ ശരാശരി എത്ര സാധാരണ പാനീയങ്ങൾ നിങ്ങൾ കഴിച്ചു?	• ഏറ്റവും കൂടുതൽ തവണ • അറിയില്ല 77
5.17	കഴിഞ്ഞ 30 ദിവസങ്ങളിൽ, എല്ലാത്തരം ലഹരിപാനീയങ്ങളും ഒരുമിച്ച് കണക്കാക്കിയാൽ, ഒരു അവസരത്തിൽ നിങ്ങൾ കഴിച്ച ഏറ്റവും കൂടുതൽ സാധാരണ പാനീയങ്ങൾ ഏതാണ്?	• നമ്പർ • 77 അറിയില്ല
5.18	കഴിഞ്ഞ 30 ദിവസങ്ങളിൽ, നിങ്ങൾക്ക് എത്ര തവണ ഉണ്ടായിരുന്നു ഒരൊറ്റ മദ്യപാന അവസരത്തിൽ ആറോ അതിലധികമോ സാധാരണ പാനീയങ്ങൾ?	നമ്പർ അറിയില്ല 77
5.19	കഴിഞ്ഞ 7 ദിവസങ്ങളിൽ ഓരോ ദിവസവും നിങ്ങൾ എത്ര സാധാരണ പാനീയങ്ങൾ കഴിച്ചു?	• തിങ്കളാഴ്ച • ചൊവ്വാഴ്ച • ബുധനാഴ്ച • വ്യാഴാഴ്ച • വെള്ളിയാഴ്ച • ശനിയാഴ്ച • ഞായറാഴ്ച

ഭക്ഷണക്രമം

5.20	ഒരു സാധാരണ ആഴ്ചയിൽ, എത്ര ദിവസങ്ങളിലാണ് നിങ്ങൾ പഴങ്ങൾ കഴിക്കുന്നത്?	• ദിവസങ്ങളുടെ എണ്ണം • അറിയില്ല 77
5.21	ആ ദിവസങ്ങളിലൊന്നിൽ നിങ്ങൾ എത്ര പഴം കഴിക്കും?	• സെർവിംഗുകളുടെ എണ്ണം • അറിയില്ല 77
5.22	ഒരു സാധാരണ ആഴ്ചയിൽ, എത്ര ദിവസങ്ങളിൽ നിങ്ങൾ പച്ചക്കറികൾ കഴിക്കും?	• ദിവസങ്ങളുടെ എണ്ണം • അറിയില്ല 77
5.23	ആ ദിവസങ്ങളിലൊന്നിൽ നിങ്ങൾ എത്ര പച്ചക്കറികൾ കഴിക്കും?	• സെർവിംഗുകളുടെ എണ്ണം • അറിയില്ല 77
5.24	നിങ്ങളുടെ ഭക്ഷണത്തിൽ ഉപ്പ് കുറയ്ക്കുന്നത് നിങ്ങൾക്ക് എത്ര പ്രധാനമാണ്?	• വളരെ പ്രധാനമാണ് • കുറച്ച് പ്രധാനമാണ് • ഒട്ടും പ്രധാനമല്ല • അറിയില്ല
5.25	നിങ്ങളുടെ ഭക്ഷണത്തിൽ അമിതമായ ഉപ്പ് ആരോഗ്യപ്രശ്നങ്ങൾക്ക് കാരണമാകുമെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല

ശാരീരിക പ്രവർത്തനങ്ങൾ

5.26	നിങ്ങളുടെ ജോലിയിൽ കുറഞ്ഞത് 10 മിനിറ്റെങ്കിലും തുടർച്ചയായി ശ്വാസോച്ഛ്വാസം അല്ലെങ്കിൽ ഹൃദയമിടിപ്പ് [ഭാരം ചുമക്കുകയോ ഉയർത്തുകയോ ചെയ്യുക, കുഴിക്കൽ അല്ലെങ്കിൽ നിർമ്മാണ ജോലികൾ] പോലെ വലിയ വർദ്ധനവിന് കാരണമാകുന്ന ഊർജ്ജസ്വലമായ പ്രവർത്തനം ഉൾപ്പെടുന്നുണ്ടോ?	ഉണ്ട്/ഇല്ല
5.27	ഒരു സാധാരണ ആഴ്ചയിൽ, നിങ്ങളുടെ ജോലിയുടെ ഭാഗമായി എത്ര ദിവസങ്ങളിലാണ് നിങ്ങൾ	ദിവസങ്ങളുടെ എണ്ണം

	ഊർജസ്വലമായ പ്രവർത്തനങ്ങൾ ചെയ്യുന്നത്?	
5.28	ഒരു സാധാരണ ദിവസത്തിൽ ജോലിസ്ഥലത്ത് ഊർജ്ജസ്വലമായ പ്രവർത്തനങ്ങൾ നടത്താൻ നിങ്ങൾ എത്ര സമയം ചെലവഴിക്കുന്നു?	മണിക്കൂർ: മിനിറ്റ്
5.29	നിങ്ങളുടെ ജോലിയിൽ മിതമായ തീവ്രതയുള്ള പ്രവർത്തനം ഉൾപ്പെടുന്നുണ്ടോ, അത് ശ്വാസോച്ഛ്വാസത്തിലോ ഹൃദയമിടിപ്പിലോ ചെറിയ വർദ്ധനവിന് കാരണമാകുന്നുണ്ടോ, അതായത് കുറഞ്ഞത് 10 മിനിറ്റെങ്കിലും തുടർച്ചയായി വേഗത്തിലുള്ള നടത്തം [അല്ലെങ്കിൽ നേരിയ ഭാരം വഹിക്കുക]?	ഉണ്ട്/ഇല്ല
5.30	ഒരു സാധാരണ ആഴ്ചയിൽ, നിങ്ങളുടെ ജോലിയുടെ ഭാഗമായി എത്ര ദിവസങ്ങളിലാണ് നിങ്ങൾ മിതമായ തീവ്രതയുള്ള പ്രവർത്തനങ്ങൾ ചെയ്യുന്നത്?	ദിവസങ്ങളുടെ എണ്ണം
5.31	ഒരു സാധാരണ ദിവസം ജോലിസ്ഥലത്ത് മിതമായ തീവ്രതയുള്ള പ്രവർത്തനങ്ങൾ ചെയ്യാൻ നിങ്ങൾ എത്ര സമയം ചെലവഴിക്കുന്നു?	മണിക്കൂർ: മിനിറ്റ്
5.32	ഒരു സാധാരണ ദിവസത്തിൽ നിങ്ങൾ സാധാരണയായി എത്ര സമയം ഇരിക്കുകയോ ചാരിയിരിക്കുകയോ ചെയ്യുന്നു?	മണിക്കൂർ: മിനിറ്റ്

വിഭാഗം-6: 24 മണിക്കൂർ ഡയറ്റ് റീകോൾ ചാർട്ട്

തീയതി	സമയം	ഭക്ഷണ ഇനം	പ്രാദേശിക പദങ്ങളിലെ അളവ്*	അളക്കാവുന്ന പദങ്ങളിലെ അളവ്	ഭക്ഷണത്തിലെ ഊർജ്ജത്തിന്റെ അളവ്

***പ്രാദേശിക വ്യവസ്ഥയിൽ അളവ്**

- 1 കപ്പ് = 250 മില്ലി
- 1 കുടി= 300 ഗ്രാം
- 1 ചിരട്ട = 150 ഗ്രാം
- 1 കലശ (തവി)= ½ കപ്പ്
- 1 ഗ്ലാസ് = 250 മില്ലി
- 1 ടീസ്പൂൺ= 5.69 ഗ്രാം
- 1 ടേബിൾസ്പൂൺ= 17.07 ഗ്രാം
- അരി കലശ (തവി)= 124 ഗ്രാം

വിഭാഗം-7- ആയുർവേദം- ചെക്ക്ലിസ്റ്റ് പ്രകാരം അനാരോഗ്യകരമായ ഭക്ഷണക്രമങ്ങളുടെയും ചിട്ടകളുടെയും പ്രയോഗത്തിന്റെ വിലയിരുത്തൽ

7.1	ഭക്ഷണ സാധനങ്ങൾ/ ജീവിത ശൈലികൾ	സമകാലിക ക്രമീകരണങ്ങളിലെ ഉദാഹരണങ്ങൾ
7.2	ഉപ്പ് അമിതമായ ഉപയോഗം	അച്ചാർ, പപ്പടം, ചിപ്സ്, ഭേൽപുരി, നമ്കീൻ തുടങ്ങിയ ഉപ്പിന്റെ പ്രധാന ഭക്ഷണങ്ങൾ അമിത അളവിൽ ഉപയോഗിക്കുന്നു.
7.3	പുളി രുചിയുള്ള ഭക്ഷണങ്ങളുടെ അമിതമായ ഉപഭോഗം	പുളിപ്പിച്ച ഉൽപ്പന്നങ്ങൾ, അച്ചാറുകൾ, ഭേൽപുരി, പുളിച്ച പഴച്ചാറുകൾ, തക്കാളി സോസ് പോലുള്ള സോസുകൾ, സംരക്ഷിത ഭക്ഷണങ്ങൾ, തൈര്, മോര്, നാരങ്ങ നീര്, വിനാഗിരി, മദ്യം, സോസ്, സ്കാഷുകൾ.
7.4	പൊരുത്തപ്പെടാത്ത ഭക്ഷണം	മുളപ്പിച്ച പച്ചക്കറികൾ/ധാന്യങ്ങൾ മാംസത്തോടൊപ്പം പാൽ, മാംസത്തോടൊപ്പം തേൻ, മാംസത്തോടൊപ്പം തേൻ, മാംസത്തോടൊപ്പം ഉഴുന്ന്, മാംസത്തോടൊപ്പം റാഡിഷ്, മാംസത്തോടൊപ്പം ശർക്കര, ഇലക്കറികളോടൊപ്പം പാൽ അല്ലെങ്കിൽ തേൻ, ചിക്കൻ കൊണ്ട് തൈര്, ഏതെങ്കിലും രൂപത്തിൽ ചൂടാക്കിയ തേൻ അല്ലെങ്കിൽ ചൂടുവെള്ളം, ഖീറിനൊപ്പം മദ്യം, ശർക്കര അല്ലെങ്കിൽ പഞ്ചസാര ചേർത്ത മത്സ്യം

7.5	കഠിനതരം ഭക്ഷണങ്ങൾ ദഹിപ്പിക്കാൻ	പിസ്സ, ചീസ് കലർന്ന ഭക്ഷണങ്ങൾ, ബേക്കറി ഉൽപന്നങ്ങൾ, കിഡ്നി ബീൻസ്, പനീർ മുതലായവ, പ്രധാനമായും ഉഴുന്ന്, ദോശ, ഇഡ്ഡലി, വട എന്നിവയിൽ നിന്ന് തയ്യാറാക്കുന്ന ഭക്ഷ്യവസ്തുക്കൾ; ഗോമാംസം, പന്നിയിറച്ചി; മാവിൽ നിന്ന് തയ്യാറാക്കിയ ഭക്ഷണം. മാംസ ഉൽപ്പന്നങ്ങളുടെ പതിവ് ഉപഭോഗം മിൽക്ക് ഷേക്ക്, ഖീർ മുതലായവ കഴിക്കുക.
7.6	സ്നിഗ്ധ അന്നപാനം (എണ്ണ കലർന്ന/അനുഗുണമായ ഭക്ഷണങ്ങൾ)	ബിരിയാണി, എണ്ണയിൽ വറുത്ത ഭക്ഷണങ്ങൾ, ഇറച്ചി സൂപ്പുകൾ, അമിതമായ നെയ്യ് കൊണ്ടുണ്ടാക്കിയ മധുരപലഹാരങ്ങൾ, പാൽ, ഖീർ തുടങ്ങിയ അമിതമായ എണ്ണമയമുള്ള ഭക്ഷണങ്ങൾ.
7.7	അതി ദ്രവപാനം (അമിതമായി കഴിക്കുന്നത് ദ്രവരൂപത്തിലുള്ള ഭക്ഷണങ്ങൾ	ശരീരത്തിനാവശ്യമായതിലും കൂടുതൽ വെള്ളം/ജ്യൂസുകൾ/മദ്യം/ശീതളപാനീയങ്ങൾ/ പാൽ/രസം/സാമ്പാർ തുടങ്ങിയ ദ്രവരൂപത്തിലുള്ള ഭക്ഷണങ്ങൾ അധികമായി കുടിക്കുക.
7.8	സ്നേഹ അതി സേവനം (എണ്ണയുടെയും കൊഴുപ്പിന്റെയും അമിതമായ ഉപഭോഗം)	മെഡിക്കൽ ആവശ്യങ്ങൾക്കോ ഭക്ഷണത്തിന്റെ ഭാഗമായോ നെയ്യ് അമിതമായി കഴിക്കുന്നത്.
7.9	അനുയോജ്യമല്ലാത്ത ഭക്ഷണങ്ങൾ	പ്രകൃതിക്ക് അനുയോജ്യമല്ലാത്ത ഭക്ഷണങ്ങൾ, ദേശ (സ്ഥലം സ്വദേശി) വിദേശ വംശജരായ പഴങ്ങൾ, ചൈനീസ് ഭക്ഷണം, പാസ്ത അല്ലെങ്കിൽ പിസ്സ, സോയാബീൻ തുടങ്ങിയ പ്രദേശത്തിന് തനതായ ഭക്ഷണം കഴിക്കുന്നത്.
7.10	ഗൃഹാതുരമായ, ചതുപ്പുനിലമുള്ള മൃഗങ്ങളുടെ മാംസം പാലിനൊപ്പം	പാലിനൊപ്പം സസ്യേതര ഭക്ഷണം, സസ്യേതര ഭക്ഷണത്തോടൊപ്പം ഐസ്ക്രീം, മാംസത്തോടുകൂടിയ പാൽ ഉൽപന്നങ്ങൾ തുടങ്ങിയവ. ബട്ടർ ചിക്കൻ പോലുള്ള വിഭവങ്ങൾ

7.11	പകൽ ഉറക്കം	ഗ്രീഷ്മ ഋതു (വേനൽക്കാലം) ഒഴികെയുള്ള പകൽ ഉറക്കത്തിൽ പതിവായി മുഴുകുന്ന ശീലം
7.12	വേഗ ധാരണം സ്വാഭാവിക പ്രേരണകളെ അടിച്ചമർത്തൽ	•ഫ്ലാറ്റസ് ·മലം ·മൂത്രം ·തുമ്മൽ ·ദാഹം ·വിശപ്പ് ·ഉറക്കം ·ചുമ ·പ്രയത്നത്തിൽ ശ്വാസോച്ഛ്വാസം. ·കൊട്ടുവാ ·കണ്ണുനീർ ·ഛർദ്ദി
7.13	ഉണരുന്ന സമയം	
7.14	വായ ശുചിത്വം	
7.15	അഭ്യംഗം (എണ്ണ മസാജ്)	ഔഷധ എണ്ണ ഉപയോഗിച്ച്/അല്ല
7.16	വ്യായാമം	ദൈർഘ്യം

വിഭാഗം-8: ബയോ-കെമിക്കൽ ടെസ്റ്റുകൾ

FBS	
സെറം കൊളസ്ട്രോൾ	

7.3: Participant information sheet (English)

Dear Sir/Madam,

Namaskaram, I am Balasankar J M, studying Masters of public health (MPH) at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. As part of the course requirement, I am conducting a home-based observational study titled "A STUDY ON SELECTED AYURVEDIC BELIEFS IN FOOD INTAKE AND NON-COMMUNICABLE DISEASE RISK FACTORS LIKE HYPERTENSION, DIABETES, OBESITY AND DYSLIPIDEMIA, AMONG MIDDLE-AGED ADULTS IN A RURAL POPULATION IN SOUTH KERALA**"**. I am contacting you to kindly participate in this research study. This information sheet and consent form may contain terms and information that you may not follow. Please feel free to ask me if any term/s or information is not clear.

Purpose and nature of the study

The study aims to study the dietary patterns of middle-aged adults and its correlations with selected NCDs like Diabetes Mellitus, hypertension, obesity and dyslipidemia and the perceptions and practices of traditional home remedies among them. In this study, the dietary patterns of middle-aged adults are identified and guided accordingly to reduce their risk of developing NCDs. This study is being conducted by me as Principal Investigator (PI) under supervision of Dr Biju Soman, Professor at Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. The ethics approval for this study has been obtained from Institutional Ethics Committee of Sree Chitra Tirunal Institute for Medical Sciences and Technology.

A total of 369 participants from 23 wards of Nedumpana panchayath are chosen through cluster sampling.

Procedure

I would like to collect the data through an interview schedule that will take about 30 minutes of your valuable time. You will be asked questions related to social, economic status and lifestyle, 24-hour diet pattern, knowledge of Ayurvedic dietary recommendations. Questions inquiring about history of any chronic illness like diabetes, hypertension, depression etc. will also be asked. There will also be physical examination to check your height, weight, pulse and BP. **5ml of blood will be collected from ante-cubital vein (side according to participants' preference) with the help of a para-medical staff (volunteers of Saanthwanam team- A Kudumbasree initiative for health sector with trained volunteers for home-based checking for height, weight, BP, Blood glucose and cholesterol. The blood will be collected in fasting.**

Why have you been selected?

The inclusion criteria specified in the study has been met.

Voluntary participation

In this study, your participation is purely voluntary. You are free to take your own time to answer the question and if you are not willing, you can ask me to skip the question. You have the complete right to withdraw your participation from the study at any time during the interview.

Possible disadvantages and risks of taking part

Participation in the study imposes no risk to your health. One of the rare risks may be loss of confidentiality. We have taken measures to minimize the risks; however, you would be asked questions, which you may find personal in nature such as questions about your behaviour, disease/s you are suffering etc. which may make you uncomfortable. In such case you are free to take time to answer or if you are not willing to answer, you can ask me to skip the question. If still you are not willing to answer further, you will be free to terminate the interview without any obligation.

Possible benefits of taking part

Though there might not be direct benefit for you from this study rather than knowing your BP and BMI, the information you share will be useful for making possible interventions in future. The results of the study can be helpful in further research and policy making. I assure you that all information that you will be sharing with me will be highly confidential and only used for research and publication purposes.

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.

Cost and financial benefit

There will be no costs to participate in this study and will not be paid for your participation in this study.

Confidentiality

All information related to you will be kept confidential and at no stage, your identity will be revealed. A respondent identification number will be assigned to each participant that will help to maintain the strict confidentiality of the data collected. Access to respondent identification number will be restricted to those analysing the data only. Participant confidentiality will be safe guarded during and after the study.

Withdrawal from the study:

Your participation in the study will be completely voluntary. You are free and have right to withdraw during the interview at any time. There will be no penalty for withdrawal or not participating in the study.

Results of the research study

Results will be published in Dspace SCTIMST. At no point, individual data will be published.

Contact information

If you have any research related questions or you would like to verify my credentials, you may contact me or member secretary of our institute's ethics committee at the following address:

Dr. Balasankar J M
E-Code: 7807
MPH student, AMCHSS,
SCTIMST, Trivandrum
Ph: 9995908559
Email: baluattingal93@sctimst.ac.in

Dr. Srinivasa Gopala
Member secretary
Institutional Ethics Committee
SCTIMST, Trivandrum
Ph: 0471- 2524689
Email: iec.mem.sec@sctimst.ac.in

7.4: Consent form (English)

CONSENT FORM

I_____ have read/been read out the information in the information sheets. The nature of the study and my involvement has been explained and all my questions have been answered satisfactorily. By signing/ putting thumb impression, I confirm that I understand what will be expected of me and that I am willing to participate in this study. I understand that participation in the study is voluntary and that I am free to withdraw at any time, without giving any reason. I understand that my identity will not be revealed in any information released to third parties or during publishing of data. I have been informed who should be contacted if the need arises. I have been given a copy of the information sheet and consent form for my record. I agree in giving my contact details to the Santhwanam worker and also for giving blood sample in fasting.

Place:

Date:

Signature of the participant:

Signature of the researcher

7.5: Participant Information Sheet (Malayalam)

ഗവേഷണ വിഷയ വിവര ഷീറ്റ്

പ്രിയ സർ/മാഡം,

നമസ്കാരം, ഞാൻ ബാലശങ്കർ ജെ എം ആണ്, തിരുവനന്തപുരത്തെ ശ്രീചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിയിലെ അച്യുതമേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിൽ മാസ്റ്റേഴ്സ് ഓഫ് പബ്ലിക് ഹെൽത്ത് (എംപിഎച്ച്) പഠിക്കുന്നു. കോഴ്സ് ആവശ്യകതയുടെ ഭാഗമായി, 'ഉയർന്ന രക്തസമ്മർദ്ദം, പ്രമേഹം, പൊണ്ണത്തടി, ഡൈസ്ലിപിഡെമിയ, മറ്റ് രോഗങ്ങൾ എന്നിവ പോലുള്ള രോഗസാംക്രമികമല്ലാത്ത രോഗസാധ്യത ഘടകങ്ങൾ, ഭക്ഷണം കഴിക്കുന്നതിലുള്ള തിരഞ്ഞെടുത്ത ആയുർവേദ വിശ്വാസങ്ങളെക്കുറിച്ചുള്ള ഒരു പഠനം' എന്ന തലക്കെട്ടിൽ ഞാൻ ഒരു ഗൃഹാധിഷ്ഠിത നിരീക്ഷണ പഠനം നടത്തുന്നു. ഈ ഗവേഷണ പഠനത്തിൽ ദയയോടെ പങ്കെടുക്കാൻ ഞാൻ നിങ്ങളെ ബന്ധപ്പെടുന്നു. ഈ വിവര ഷീറ്റിലും സമ്മത ഫോമിലും നിങ്ങൾ പാലിക്കാത്ത നിബന്ധനകളും വിവരങ്ങളും അടങ്ങിയിരിക്കാം. ഏതെങ്കിലും നിബന്ധനകൾ അല്ലെങ്കിൽ വിവരങ്ങൾ വ്യക്തമല്ലെങ്കിൽ എന്നോട് ചോദിക്കാൻ മടിക്കേണ്ടതില്ല.

പഠനത്തിന്റെ ഉദ്ദേശ്യവും സ്വഭാവവും

മധ്യവയസ്കരായ മുതിർന്നവരുടെ ഭക്ഷണരീതികളും ഡയബറ്റിസ് മെലിറ്റസ്, ഹൈപ്പർടെൻഷൻ, പൊണ്ണത്തടി, രക്തത്തിലെ കൊഴുപ്പ് തുടങ്ങിയ തിരഞ്ഞെടുത്ത സാംക്രമികമല്ലാത്ത രോഗങ്ങ പരസ്പര ബന്ധവും പഠിക്കാൻ ഈ പഠനം ലക്ഷ്യമിടുന്നു. ഈ പഠനത്തിൽ, മധ്യവയസ്കരായ ആളുകളുടെ ഭക്ഷണരീതികൾ തിരിച്ചറിയുകയും എൻസിഡികൾ വികസിപ്പിക്കാനുള്ള സാധ്യത കുറയ്ക്കുകയും ചെയ്യുന്നു. തിരുവനന്തപുരത്തെ ശ്രീചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിയിലെ അച്യുതമേനോൻ സെന്റർ ഫോർ ഹെൽത്ത് സയൻസ് സ്റ്റഡീസിലെ പ്രൊഫസർ ഡോ ബിജു സോമന്റെ മേൽനോട്ടത്തിൽ പ്രിൻസിപ്പൽ ഇൻവെസ്റ്റിഗേറ്റർ (പിഐ) എന്ന നിലയിൽ ഞാൻ ഈ പഠനം നടത്തുന്നു. ശ്രീചിത്ര തിരുനാൾ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഫോർ മെഡിക്കൽ സയൻസസ് ആൻഡ് ടെക്നോളജിയുടെ ഇൻസ്റ്റിറ്റ്യൂഷണൽ എത്തിക്സ് കമ്മിറ്റിയിൽ നിന്നാണ് ഈ പഠനത്തിന് എത്തിക്സ് അംഗീകാരം ലഭിച്ചത്.

നെടുമ്പന പഞ്ചായത്തിലെ 23 വാർഡുകളിൽ നിന്നായി 410 പേരെയാണ് ക്ലസ്റ്റർ സാമ്പിളിലൂടെ തിരഞ്ഞെടുത്തത്.

നടപടിക്രമം

നിങ്ങളുടെ വിലപ്പെട്ട സമയത്തിന്റെ ഏകദേശം 30 മിനിറ്റ് എടുക്കുന്ന ഒരു ഇന്റർവ്യൂ ഷെഡ്യൂളിലൂടെ ഡാറ്റ ശേഖരിക്കാൻ ഞാൻ ആഗ്രഹിക്കുന്നു. സാമൂഹിക, സാമ്പത്തിക സ്ഥിതി, ജീവിതശൈലി, 24 മണിക്കൂർ ഭക്ഷണക്രമം എന്നിവയുമായി ബന്ധപ്പെട്ട ചോദ്യങ്ങൾ നിങ്ങളോട് ചോദിക്കും. പ്രമേഹം, രക്താതിമർദ്ദം, രക്തത്തിലെ കൊഴുപ്പ്, പൊണ്ണത്തടി മുതലായ ഏതെങ്കിലും വിട്ടുമാറാത്ത രോഗങ്ങളുടെ ചരിത്രം അന്വേഷിക്കുന്ന ചോദ്യങ്ങളും ചോദിക്കും. നിങ്ങളുടെ ഉയരം, ഭാരം, പൾസ്, രക്തസമ്മർദ്ദം എന്നിവ പരിശോധിക്കുന്നതിനുള്ള ശാരീരിക പരിശോധനയും ഉണ്ടാകും.

എന്തുകൊണ്ടാണ് നിങ്ങളെ തിരഞ്ഞെടുത്തത്?

പഠനത്തിൽ വ്യക്തമാക്കിയ ഉൾപ്പെടുത്തൽ മാനദണ്ഡങ്ങൾ പാലിച്ചു.

സന്നദ്ധ പങ്കാളിത്തം

ഈ പഠനത്തിൽ, നിങ്ങളുടെ പങ്കാളിത്തം പൂർണ്ണമായും സ്വമേധയാ ഉള്ളതാണ്. ചോദ്യത്തിന് ഉത്തരം നൽകാൻ നിങ്ങളുടെ സമയമെടുക്കാൻ നിങ്ങൾക്ക് സ്വാതന്ത്ര്യമുണ്ട്, നിങ്ങൾക്ക് താൽപ്പര്യമില്ലെങ്കിൽ, ചോദ്യം ഒഴിവാക്കാൻ എന്നോട് ആവശ്യപ്പെടാം. ഇന്റർവ്യൂ സമയത്ത് എപ്പോൾ വേണമെങ്കിലും പഠനത്തിൽ നിന്ന് നിങ്ങളുടെ പങ്കാളിത്തം പിൻവലിക്കാനുള്ള പൂർണ അവകാശം നിങ്ങൾക്കുണ്ട്.

പങ്കെടുക്കുന്നതിന്റെ സാധ്യമായ ദോഷങ്ങളും അപകടസാധ്യതകളും

പഠനത്തിൽ പങ്കെടുക്കുന്നത് നിങ്ങളുടെ ആരോഗ്യത്തിന് ഒരു അപകടവും ഉണ്ടാക്കുന്നില്ല. അപൂർവമായ അപകടങ്ങളിൽ ഒന്ന് രഹസ്യസ്വഭാവം നഷ്ടപ്പെടാം. അപകടസാധ്യതകൾ കുറയ്ക്കുന്നതിന് ഞങ്ങൾ നടപടികൾ സ്വീകരിച്ചിട്ടുണ്ട്; എന്നിരുന്നാലും, നിങ്ങളോട് ചോദ്യങ്ങൾ ചോദിക്കും, നിങ്ങളുടെ സ്വഭാവം, നിങ്ങൾ അനുഭവിക്കുന്ന അസുഖങ്ങൾ എന്നിവയെ കുറിച്ചുള്ള ചോദ്യങ്ങൾ പോലുള്ള വ്യക്തിപരമായ സ്വഭാവം നിങ്ങൾക്ക് തോന്നിയേക്കാം. അത്തരം സന്ദർഭങ്ങളിൽ നിങ്ങൾക്ക് ഉത്തരം നൽകാൻ സമയമെടുക്കാം അല്ലെങ്കിൽ ഉത്തരം നൽകാൻ നിങ്ങൾ തയ്യാറല്ലെങ്കിൽ, ചോദ്യം ഒഴിവാക്കാൻ നിങ്ങൾക്ക് എന്നോട് ആവശ്യപ്പെടാം. എന്നിട്ടും കൂടുതൽ ഉത്തരം നൽകാൻ നിങ്ങൾ തയ്യാറല്ലെങ്കിൽ, ഒരു ബാധ്യതയുമില്ലാതെ അഭിമുഖം അവസാനിപ്പിക്കാൻ നിങ്ങൾക്ക് സ്വാതന്ത്ര്യമുണ്ട്.

പങ്കെടുക്കുന്നതിന്റെ സാധ്യമായ നേട്ടങ്ങൾ

നിങ്ങളുടെ ബിപിയും ബിഎംഐയും അറിയുന്നതിനുപകരം ഈ പഠനത്തിൽ നിന്ന് നിങ്ങൾക്ക് നേരിട്ടുള്ള പ്രയോജനം ഉണ്ടായേക്കില്ലെങ്കിലും, ഭാവിയിൽ സാധ്യമായ ഇടപെടലുകൾ നടത്താൻ നിങ്ങൾ പങ്കിടുന്ന വിവരങ്ങൾ ഉപയോഗപ്രദമാകും. കൂടുതൽ ഗവേഷണത്തിനും നയരൂപീകരണത്തിനും പഠന ഫലങ്ങൾ സഹായകമാകും. നിങ്ങൾ എന്നോട് പങ്കിടുന്ന എല്ലാ വിവരങ്ങളും അതീവ രഹസ്യാത്മകവും ഗവേഷണത്തിനും പ്രസിദ്ധീകരണ ആവശ്യങ്ങൾക്കും മാത്രമായി ഉപയോഗിക്കുമെന്നും ഞാൻ നിങ്ങൾക്ക് ഉറപ്പ് നൽകുന്നു.

പഠനവുമായി ബന്ധപ്പെട്ട എന്തെങ്കിലും വ്യക്തതയ്ക്ക്, നിങ്ങൾക്ക് എന്നെ ബന്ധപ്പെടാം കൂടാതെ ഈ പഠനത്തിന്റെ ആധികാരികതയെക്കുറിച്ചുള്ള എന്തെങ്കിലും ചോദ്യങ്ങൾക്ക്, നിങ്ങൾക്ക് SCTIMST-യുടെ സ്ഥാപനപരമായ എത്തിക്സ് കമ്മിറ്റി (IEC) അംഗ സെക്രട്ടറിയുമായി ബന്ധപ്പെടാം.

ചെലവും സാമ്പത്തിക നേട്ടവും

ഈ പഠനത്തിൽ പങ്കെടുക്കുന്നതിന് ചെലവുകളൊന്നും ഉണ്ടാകില്ല, ഈ പഠനത്തിൽ നിങ്ങളുടെ പങ്കാളിത്തത്തിന് പണം നൽകില്ല.

രഹസ്യാത്മകത

നിങ്ങളുമായി ബന്ധപ്പെട്ട എല്ലാ വിവരങ്ങളും രഹസ്യമായി സൂക്ഷിക്കും, ഒരു ഘട്ടത്തിലും നിങ്ങളുടെ ഐഡന്റിറ്റി വെളിപ്പെടുത്തില്ല. ശേഖരിക്കുന്ന ഡാറ്റയുടെ കർശനമായ രഹസ്യാത്മകത നിലനിർത്താൻ സഹായിക്കുന്ന ഓരോ പങ്കാളിക്കും ഒരു പ്രതികരിക്കുന്ന തിരിച്ചറിയൽ നമ്പർ നൽകും. പ്രതികരിക്കുന്നവരുടെ തിരിച്ചറിയൽ നമ്പറിലേക്കുള്ള പ്രവേശനം ഡാറ്റ വിശകലനം ചെയ്യുന്നവർക്ക് മാത്രമായി പരിമിതപ്പെടുത്തും. പഠന സമയത്തും ശേഷവും പങ്കെടുക്കുന്നവരുടെ രഹസ്യസ്വഭാവം സുരക്ഷിതമായിരിക്കും.

പഠനത്തിൽ നിന്ന് പിൻവാങ്ങൽ:

പഠനത്തിൽ നിങ്ങളുടെ പങ്കാളിത്തം പൂർണ്ണമായും സ്വമേധയാ ഉള്ളതായിരിക്കും. നിങ്ങൾ സ്വതന്ത്രനാണ് കൂടാതെ എപ്പോൾ വേണമെങ്കിലും ഇന്റർവ്യൂ സമയത്ത് പിൻവലിക്കാനുള്ള അവകാശമുണ്ട്. പഠനത്തിൽ നിന്ന് പിന്മാറുകയോ പങ്കെടുക്കാതിരിക്കുകയോ ചെയ്താൽ പിഴ ഈടാക്കില്ല.

ഗവേഷണ പഠനത്തിന്റെ ഫലങ്ങൾ

ഫലങ്ങൾ D സ്പേസ് SCTIMST-ൽ പ്രസിദ്ധീകരിക്കും. ഒരു ഘട്ടത്തിലും, വ്യക്തിഗത ഡാറ്റ പ്രസിദ്ധീകരിക്കില്ല.

ബന്ധപ്പെടാനുള്ള വിവരങ്ങൾ

നിങ്ങൾക്ക് ഗവേഷണവുമായി ബന്ധപ്പെട്ട എന്തെങ്കിലും ചോദ്യങ്ങളുണ്ടെങ്കിൽ അല്ലെങ്കിൽ എന്റെ ക്രെഡൻഷ്യലുകൾ പരിശോധിക്കാൻ നിങ്ങൾ ആഗ്രഹിക്കുന്നുവെങ്കിൽ, ഇനിപ്പറയുന്ന വിലാസത്തിൽ നിങ്ങൾക്ക് എന്നെയോ ഞങ്ങളുടെ ഇൻസ്റ്റിറ്റ്യൂട്ടിന്റെ എത്തിക്സ് കമ്മിറ്റി അംഗം സെക്രട്ടറിയുമായോ ബന്ധപ്പെടാം:

ഡോ. ബാലശങ്കർ ജെ എം

ഇ-കോഡ്: 7807

എംപിഎച്ച് വിദ്യാർത്ഥി,

SCTIMST,
തിരുവനന്തപുരം

Ph: 9995908559

ഡോ. ശ്രീനിവാസ ഗോപാല

മെമ്പർ സെക്രട്ടറി

എഎംസിഎച്ച്എസ്എസ്,

SCTIMST,
തിരുവനന്തപുരം

Ph: 0471- 2524689

ANNEXURE-7.6: Consent form (Malayalam)

<u>അനുമതി പത്രം</u>

ഞാൻ .....ഈ പഠനത്തിൽ പറഞ്ഞിരിക്കുന്ന കാര്യങ്ങൾ വായിച്ചു /കേട്ട് മനസിലാക്കി ഈ പഠനത്തിലുള്ള എന്റെ സ്വമേധയായ പങ്കാളിത്തം ഞാൻ ഒപ്പു പതിപ്പിച്ച് ഉറപ്പാക്കുന്നു. എനിക്ക് ഈ പഠനത്തിന്റെ ഏതൊരു ഘട്ടത്തിലും യാതൊരു വിശദീകരണവും നൽകാതെ തന്നെ പിന്മാറാമെന്നും ഞാൻ നൽകുന്ന വിവരങ്ങൾ രഹസ്യമായിത്തന്നെ സൂക്ഷിക്കുമെന്നും മനസിലായി. ഈ പഠനത്തിന്റെ സംശയങ്ങൾക്ക് ആരുമായി ബന്ധപെടാമെന്നും എന്നെ അറിയിച്ചിട്ടുണ്ട്. ഈ പഠനത്തിൽ പങ്കെടുക്കുവാൻ എനിക്ക് സമ്മതമാണ്. അതോടൊപ്പം എൻറെ വിവരങ്ങൾ സാന്ത്വനം വർക്കറുമായി പങ്കുവെക്കാനും രക്തം പരിശോധനയ്ക്കായി നൽകാനും എനിക്ക് സമ്മതമാണ്

സ്ഥലം:
തിയ്യതി:
പങ്കെടുക്കുന്ന ആളുടെ ഒപ്പ്.....

ഗവേഷകന്റെ ഒപ്പ്.....

7.7: IEC Approval letter

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/1817/JANUARY/ 2022 02.03.2022

Dr. Balasankar JM
MPH Student, AMCHSS
SCTIMST, Thiruvananthapuram

Dear Dr. Balasankar,

The Institutional Ethics Committee held on 5th February, 2022, reviewed and discussed your application to conduct the study titled "**A STUDY ON SELECTED AYURVEDIC BELIEFS IN FOOD INTAKE & NON-COMMUNICABLE DISEASE RISK FACTORS LIKE HYPERTENSION, DIABETES, OBESITY & DYSLIPIDAEMIA AMONG ADULTS IN A RURAL POPULATION IN SOUTH KERALA**" (IEC/1817)".

The following members of the Ethics Committee were present at the meeting held on 5th February, 2022.

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.	Adv. Priya Kaimal	LLM, MBL	Female	Legal Expert	No
4.	Dr. Manikandan.S	MBBS,MD,PDCC	Male	Clinician	Yes
5.	Dr. Narayanan Namboodiri. K K	MBBS,MD,DM	Male	Clinician	Yes
6.	Dr. Biju Soman	MBBS,MD, DPH, MSc, DLSHTM	Male	Basic Medical Scientist	Yes
7.	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 Chairman, IEC, SCTIMST dated 12.01.2022*
3. *Responses/Amendments made based on the Reviewer's comments*
4. *IEC Application Form*
5. *Research Proposal*
6. *Questionnaire in English and Malayalam*
7. *Participant Information Sheet and Consent Form in English and Malayalam*
8. *CV of Principal Investigator and Guide*
9. *Declaration Form*
10. *SRC Recommendation*

Revised submission

1. *Checklist Form*
2. *Responses/Amendments made based on the Reviewer's comments*
3. *Covering letter addressed to the Member Secretary, IEC, SCTIMST dated 25.02.2022*
4. *Copy of IEC Recommendation letter dated 21.02.2022*
5. *IEC Application Form*
6. *Research Proposal*
7. *Questionnaire in English and Malayalam*
8. *Participant Information Sheet and Consent Form in English and Malayalam*
9. *CV of Principal Investigator and Guide*
10. *Declaration Form*
11. *Letter from Ms. Girijakumary, President, Nedumpana Gram Panchayat, Kollam.*

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

PLAGIARISM CHECK RESULTS

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Analysis address	bijusoman.sctims@analysis.urkund.com

Sources included in the report

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URL: https://www.paho.org/en/topics/noncommunicable-diseases
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URL: http://www.iamj.in/prposts/2018/images/upload/1154_1157.pdf
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