

**UNDERSTANDING FRESH FRUIT AND VEGETABLE INTAKE CHOICES
AMONG YOUNG ADULTS IN TRIVANDRUM CITY, KERALA:
DEVELOPMENT OF A DISCRETE CHOICE EXPERIMENT**

Dr. SANDRA K N

**Dissertation submitted in partial fulfilment of the requirements for the award of
the degree of
Master of Public Health**



ACHUTHA MENON CENTRE FOR HEALTH SCIENCE STUDIES

**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND
TECHNOLOGY, TRIVANDRUM
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AUGUST, 2023

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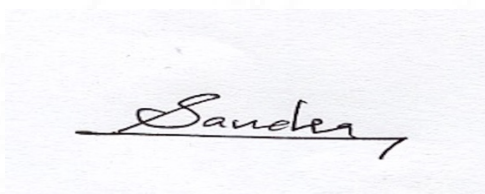
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DECLARATION

I hereby declare that this dissertation titled ‘Understanding fresh fruit and vegetable intake choices among young adults in Trivandrum city, Kerala: Development of a Discrete Choice Experiment’ is the bonafide record of my original research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

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Dr. Sandra K N

Achutha Menon Centre for Health Science Studies

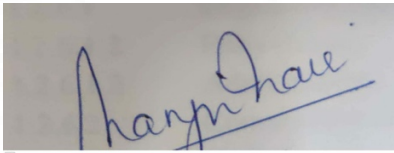
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August, 2023

CERTIFICATE

Certified that the dissertation titled “Understanding fresh fruit and vegetable intake choices among young adults in Trivandrum city: Development of a Discrete Choice Experiment” is a record of the research work undertaken by Dr. Sandra K N in partial fulfilment of the requirements for the award of the degree of “Master of Public Health” under my guidance and supervision.

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Note: No separate Participant Information Sheet and Informed Consent Form for DCE (Discrete Choice Experiment) Pilot Study was used since DCE was done in a subsample of the survey.

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LIST OF ABBREVIATIONS

DCE : Discrete Choice Experiment

IEC : Institutional Ethics Committee

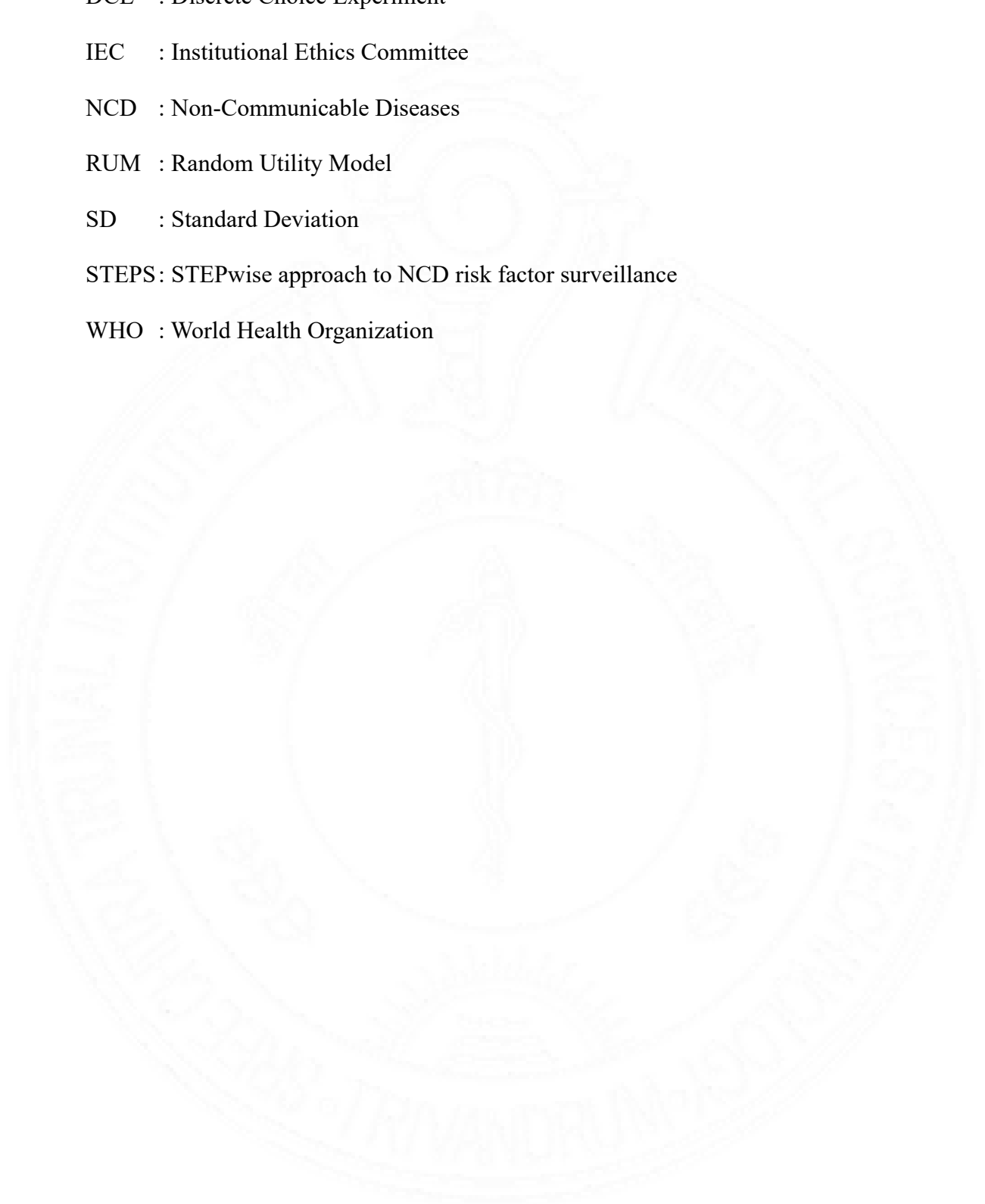
NCD : Non-Communicable Diseases

RUM : Random Utility Model

SD : Standard Deviation

STEPS: STEPwise approach to NCD risk factor surveillance

WHO : World Health Organization



ABSTRACT

Introduction

In the context of a growing burden of non-communicable diseases (NCDs), there is a significant focus on their prevention and control. The consumption of fresh fruits and vegetables is recognized as a protective behaviour that reduces the risk of NCDs. Studies from Kerala indicate that the intake of fresh fruits and vegetables among the adults is considerably lower than the recommended amounts. It is a known fact that the dietary behaviour and choices begin in early adulthood and therefore is an ideal period for healthy dietary behaviour interventions. The aim of this study is to understand the fresh fruits and vegetable intake among young adults in the age group 18-30 years living in Trivandrum city, Kerala and understand how young adults make preferences related to the consumption of fruits and vegetables.

Methodology

A cross-sectional survey was carried out among young adults aged 18-30 years ($n = 280$, mean age: 23.63(SD 3.53) years), to understand the fresh fruit and vegetable consumption among them. Since conventional methodologies are limited in scope to understand dietary choices, a Discrete Choice Experiment (DCE) was used to elicit the preferences and decision making of young adults related to consumption of fresh fruits and vegetables.

Results

The average daily intake of fresh fruits and vegetables in the study population (2.77 servings per day) was considerably lower than the recommended daily intake of five servings per day. The proportion of young adults who adhered to a recommended daily intake of fresh fruits and vegetables was 7.2 per cent. The DCE indicated a higher preference for consuming fruits and vegetables as a side dish/drink along with main meal ($B = 0.376$; $p < 0.0001$), and lower preference for costly items ($B = -0.224$; $p < 0.0001$).

Discussion

Intake of fresh fruits and vegetables among young adults and children are much below the recommended daily amounts. The findings of the DCE indicate that young adults had a higher preference for less costly fruits and vegetables and preferred to consume them as side dishes probably due to the existing food culture and cuisine. This study is one of the first to use DCE as a method to understand dietary choices among adults in India. Larger and more detailed DCEs may help to have a better understanding of dietary preferences among young adults and inform targeted interventions.

CHAPTER 1

INTRODUCTION AND REVIEW OF LITERATURE

1.1 Non-Communicable Diseases (NCD) burden in India

India's population has risen to approximately 1.3 billion and correspondingly the incidence of non-communicable diseases has been on the rise. In fact, NCDs account for a significant burden, with around 5.87 million deaths (roughly 60% of all deaths) in India attributed to them (Nethan et al., 2017). Unhealthy diet, physical inactivity, tobacco and alcohol are identified as the major risk factors for NCDs (Mathur et al., 2021). Dietary intake is linked to three major NCDs under focus:- diabetes, cardiovascular diseases and cancer (Organization, 2003). Periodic studies on NCD risk factors in India have revealed an overall increase in obesity and overweight and a decrease in the use of tobacco usage and alcohol consumption (Mathur et al., 2021; Nethan et al., 2017). The entirety of the scenario suggests the epidemiological and risk shift that India has experienced in recent times. Over the past two decades, India has undergone significant socio-economic and cultural changes, driven by the process of globalization and liberalization that began in the early 1990s. The integration of domestic agrarian and food markets with the global market had occurred (Food and Agriculture Organization of the United Nations, 2004) and in addition, the convenience food market is expanding at a rapid pace (Technology, 2020). This transition has altered the indigenous food environment and dietary patterns (Food and Agriculture Organization of the United Nations, 2004).

The transition in the types of fuels or energy sources being used in the transportation sector has had a direct impact on the transportation sector, primarily by creating a conducive environment that encourages sedentary habits. The convergence of nutrition transition,

epidemiological transition and risk transition has emerged as a significant public health concern.

1.2 NCD burden in Kerala

In comparison to other Indian states, Kerala is in a relatively advanced stage of epidemiological transition. Over 90% of premature mortality in Kerala (mortality in the 15–69 years age group) could be attributed to NCDs (India State-Level Disease Burden Initiative Diabetes Collaborators, 2018). A study on the burden of diabetes across all states in India revealed a higher prevalence of diabetes in the southern states of Kerala and Tamil Nadu (India State-Level Disease Burden Initiative Diabetes Collaborators, 2018).

1.3 Dietary intervention for NCD management- role of fresh fruits and vegetables

Regarding dietary interventions to reduce the risk of non-communicable diseases (NCDs), it has been significantly proven that the consumption of fresh fruits and vegetables has a protective effect on health (Fruit and Vegetables, n.d.; Woodside et al., 2023). Fresh fruits and vegetables contain phytonutrients, potassium, and dietary fibres, all of which are beneficial for lowering the risk of cardiovascular disease. To get health and nutrition benefits, the WHO recommends the consumption of at least 400 g (five servings) of fresh fruits and vegetables per day (Nutrition – Data and statistics, n.d.; Organization, 2003). This recommended daily intake is found to reduce the risk of coronary heart disease, stroke and blood pressure (Healthy diet, n.d.). Experiments like DASH (Dietary Approaches to Stop Hypertension) trials have elicited the effect of fresh fruits and vegetables on hypertension alone and in combination with a low-fat diet (Suri et al., 2020).

1.4 Pattern of fruit and vegetable consumption in Kerala

Studies in India reveal only 120-140 g per capita per day consumption of fruits and vegetables (Choudhury et al., 2020). In Kerala, the diet mainly consists of cereals, animal sources and dairy products while per capita consumption of fruits and vegetables (excluding roots and tubers) remains very low. A Kerala study on the consumption of fruits and vegetables among persons with hypertension and diabetes showed that an overall of 13.9 per cent consumed the recommended level of fruits and vegetables (Thulaseedharan et al., 2021). The study had called for further exploration of the accessibility and acceptability of recommended intake of fruits and vegetables in the Kerala context. Previous studies on dietary habits in Kerala reveal a substantial number of people especially adults and adolescents prefer junk foods over wholesome foods or fruits (Joseph and ti, 2017; Mc, 2020). The rapid growth of restaurants and eateries in Kerala signifies a shift in the attitude towards dining out.

On the other side, macro-level efforts to improve the production and availability of fruits and vegetables are happening in Kerala. As per the latest production statistics available with the government, domestic vegetable production and the acreage under cultivation have been increased in the state (Kerala produces 78% of vegetables needs, says agri dept; experts not convinced- The New Indian Express, n.d.). It is not clear whether and to what extent, such transitions has reflected in the dietary pattern and food choices of people and needs to be studied.

1.5 Fruit and vegetable intake of young adults in urban setting

Young adults, often described as the age group 18-30 years (Arnett et al., 2014; Council et al., 2013) are vulnerable to unhealthy eating practices (Powell et al., 2019). Their

vulnerability can be due to several financial and mental transitions at the individual level or/and due to socio- economic and cultural transitions. A study conducted among college students in Kerala reported inadequate intake of the recommended level of fruits and vegetables and called for further interventions (Joseph and ti, 2017). In urban areas, particularly among the younger population, factors such as increasing income, the growth of the convenience food market and the acceptance of the ‘dine-out’ culture can significantly influence people’s dietary choices. Conversely, the presence of diverse food options in urban areas may enhance the accessibility and availability of fresh fruits and vegetables. Given this context, it is important to study what and how are actual food choices made by individuals.

1.6 Food choice influencing food pattern

Food pattern is the result of choices people make. Food choice is defined as a process by which people select, acquire, prepare and consume foods, which results from the competing, reinforcing and interacting influences of a variety of factors (Lizin et al., 2022). The theoretical backing for the motives leading to food choices can be derived from the macro theory of self-determination. It assumes that health behaviours are propelled by many motivations positioned at various points along a continuum of autonomy (Deci and Ryan, 2015). This theory depicts the basic idea that motivation influences health behaviours. And the interplay of multiple motives makes the food choice process complex, contextual and dynamic.

Numerous studies from across the world have identified various factors that influence individual’s food choices. Most of these studies are questionnaire-based surveys that have used tools such as Food Choice Questionnaires, to gather relevant data. Questionnaires of

this nature typically centre around the examination of factors that impact food choice motives. These factors commonly include health concerns, cost, availability, appearance, society and culture, ethical concerns, mood, attitudes, nutritional information and other related aspects (Guiné Raquel et al., 2020; Steptoe et al., 1995). These studies aim to determine the level of influence that the various factors have on individual's decision-making process regarding food choice and consumption. However, one limitation of this quantitative approach is that it provides only a general hint regarding on what basis people choose food.

Many often, in real life, people make choices which seem to be very complex or unpredictable in different contexts. Also, often such choices would be habitual or low-involvement decisions. Such variations cannot be captured through the kind of empirical studies mentioned above. The definition of choice itself varies in contexts when people have only a single choice or they have multiple options available. In situations where multiple alternatives are available for a food category, people make trade-offs while choosing a particular item. This understanding of the trade-offs made when choosing among multiple alternatives gives an actual picture of what people in a particular community prefer to eat in real settings.

1.7 Role of Discrete Choice Experiments in understanding food choice

Discrete Choice Experiment (DCE) which has been widely used in market science and behavioural science, is an appropriate methodology to elicit such trade-offs happening in the food choice process (Lizin et al., 2022; Reed Johnson et al., 2013). In DCE, participants are asked to choose their preferred alternative out of at least two alternatives given. Each alternative option combines multiple characteristics or attributes. These attributes are the observed source of influences in the decision-making regarding a particular food item.

The theoretical foundation of Discrete Choice Experiments lies in Lancaster's theory of consumer behaviour and Random Utility Model (RUM) (Lizin et al., 2022; Wang et al., 2021). According to the theory of consumer behaviour, the overall utility of consuming a product can be attributed to the marginal utilities associated with the specific features of the product. While RUM theory states that individuals value attributes having maximum utility. Since the attributes associated with goods or services pose either positive or negative utility impacts and can be perceived as being more or less important, trade-offs become inevitable. Hence participants need to choose one of the alternatives which may be labelled or unlabelled, in a series of choice sets in which the attributes' levels are deliberately varied according to an experimental design (Lizin et al., 2022).

Identification of attributes relevant to the stated preference and assigning levels to attributes are the crucial stages in Discrete Choice Experiment (Reed Johnson et al., 2013). Once the attributes are fixed, choice tasks can be developed based on experimental design. Once the tasks are formulated as different choice sets, they can be pretested, modified and then used for a pilot study or a larger study. Key stages of DCE Tool development are depicted in Fig: 1.1.

Fig: 1.1 Key stages for developing a Discrete Choice Experiment

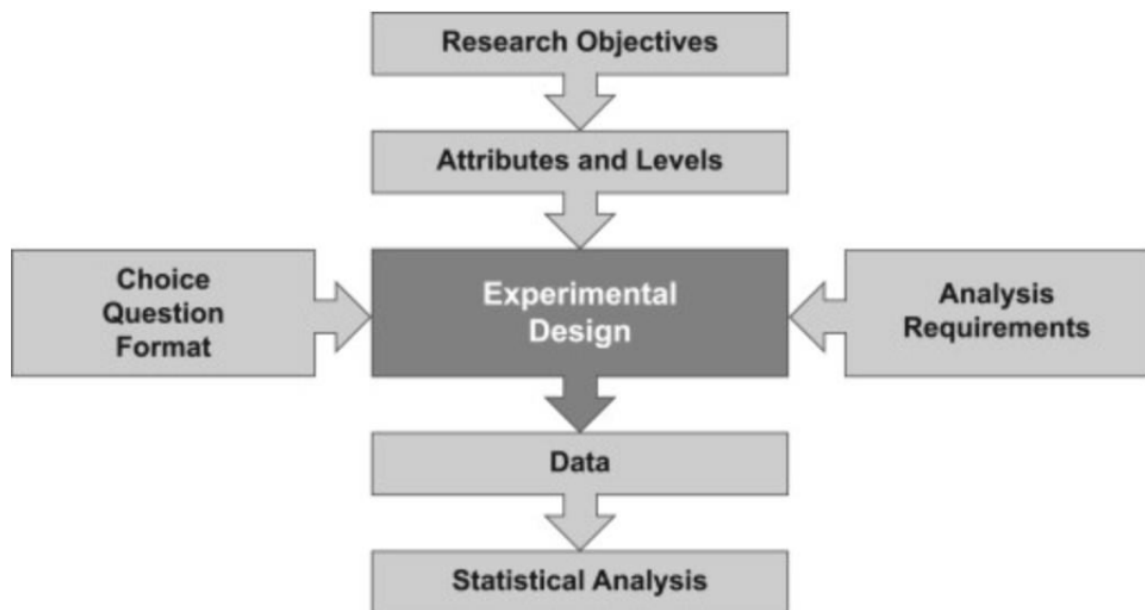


Image courtesy: Reed Johnson et al., 2013

Qualitative processes, which can be either interviews or focus group discussions are very relevant in the designing of a DCE Tool (Vass et al., 2017). Data from the choice questions are analysed to predict choice and produce estimated preference weights, or choice-model parameters. Insights on the relative importance of the selected attributes in DCE could be used in policy-making and resource allocation.

1.8 Rationale of the study

Despite the higher burden of NCD in Kerala, the recommended intake of fresh fruits and vegetables remains very low. Existing evidence also suggests that young adults are more prone to unhealthy eating practices.

Furthermore, urban areas in Kerala are rapidly evolving in terms of food culture and consumption. On one hand, factors such as higher income levels, the growth of the

convenience food market, the popularity of online food ordering applications and the prevalence of the dine-out culture are driving an unhealthy food culture. On the other hand, the presence of food diversity in urban areas could be a factor that can support adherence to healthy eating practices, such as the consumption of fresh fruits and vegetables. An assessment of fresh fruit and vegetable consumption among young adults in urban Kerala stands significant in this context.

Food consumption pattern is the result of choices people make. Previous studies conducted in Kerala have made efforts to examine the factors influencing food choices. These studies have predominantly adopted the conventional approaches to investigate food decision-making processes and choices. The findings of these studies have provided valuable insights into the potential factors that impact individual's food choices. But those approaches are limited in the sense that the choices and preferences happening in real life remain much more complex. DCE is a solution to elicit the preference pattern of food in a real context. Even though these days DCEs are widely used to understand food and dietary choices across the globe, no such studies have been done in the Kerala context. The present study attempts to improve the understanding of the factors influencing fruit and vegetable consumption through an experimental approach.

1.9 Objectives of the study

1. To understand the fresh fruit and vegetable consumption among young adults in the age group 18-30 years in Trivandrum city.
2. To explore the factors affecting their food choices and develop a Discrete Choice Experiment.

CHAPTER 2

METHODOLOGY

The study had two parts. The first part was to understand the consumption of fresh fruits and vegetables among young adults in Trivandrum city. The second part was the development and pilot testing of Discrete Choice Experiment tool. This part involved both qualitative and quantitative components. Qualitative methods (Interview and pre-testing) were used in the process of DCE Tool development. The final pilot study of the DCE tool was a quantitative survey.

For ease of understanding, both the parts are separately discussed in the present chapter.

2.1 Part I - Study to understand fruit and vegetable consumption

2.1.1 Study type/design

Cross-sectional survey

2.1.2 Study setting

The study was conducted among young adults who are currently residing in Trivandrum city.

Inclusion criteria:

- 18-30 years of age (male/female/others)
- Living in the selected wards of Trivandrum city, in their homes for a period of three months or more
- Can understand and communicate in either Malayalam or English language
- Willing to provide voluntary informed consent by responding independently

Exclusion criteria:

- Those who are on a specific diet like the keto diet, fruit diet etc.

2.1.3 Sample size estimation and justification

The sample size was calculated in Open Epi Version 3.01. From literature review, the population with recommended fresh fruit and vegetable intake in Kerala was found to be 14 per cent (Thulaseedharan et al., 2021). With precision 5 per cent, design effect 1.5 and 95 percent CI, the sample size was calculated to be 278 rounded off to 280.

2.1.4 Sample selection procedures

Multistage cluster sampling was done for the cross-sectional survey on fruit and vegetable consumption. The survey was conducted in ten clusters (wards) with 28 participants from each cluster as defined in the study setting.

Ten wards were randomly selected from the 100 wards in Trivandrum City Corporation using lottery method. The interviewer reached the first bus stop or junction in each cluster and a pen rotation method was followed. Every third household was taken from the direction which the pen pointed. Screening was done to identify the eligible participants in that household. If a participant from the selected household was not willing or not available at the time of interview, then that household was substituted by the next third household until 28 participants from an individual cluster was obtained.

In case more than one eligible participant was there in a household, the person whose birthday was the closest to the date of interview was selected.

2.1.5 Study tool

WHO STEPS Questionnaire to assess fruit and vegetable consumption and salt intake was used. A pre-validated Malayalam version of the questionnaire was administered to the participants.

2.1.6 Measurements

The questions regarding fruit and vegetable consumption were:

- The number of days they usually ate fruit, and the number of days they usually ate vegetables (excluding tubers), in a typical week
- The number of ‘standard serving’ sizes of fruits and vegetables they usually ate on those days.

A ‘standard serving’ size of vegetables was defined as a cup of raw green leafy vegetables, a half cup of cooked or chopped raw vegetables or half cup of vegetable juice. A ‘standard serving’ size of fruit was defined as a piece of whole of fruit, a half cup of cooked, chopped or processed fruit or half cup of fruit juice. These quantities correspond to roughly 80 grams. To facilitate the interview, a show card which was available along with the WHO STEPS Questionnaire showing a ‘standard serving’ size of different types of fruits and vegetables was used.

2.1.7 Variables used

Dependent variables

The dependent variables include the frequency of consumption of fruits and vegetables in a typical week as well as a typical day.

These variables were combined together to get the average daily consumption of fruit and vegetables together, for bivariate analysis

Independent variables

Variables related to baseline characteristics of study participants like age, sex, relationship status, educational status, occupational status, ration card type, monthly household income, number of household members were considered.

2.1.8 Data Collection

Data collection was done in the offline mode using printed questionnaires. It was done during the months of April–June in the year 2023 by the principal investigator after obtaining ethical clearance from Institutional Ethics Committee (IEC) of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. An information sheet and informed consent form were given to the participants. Only those who provided the consent were interviewed for the survey. The questionnaires were administered by the principal investigator herself and the responses were noted.

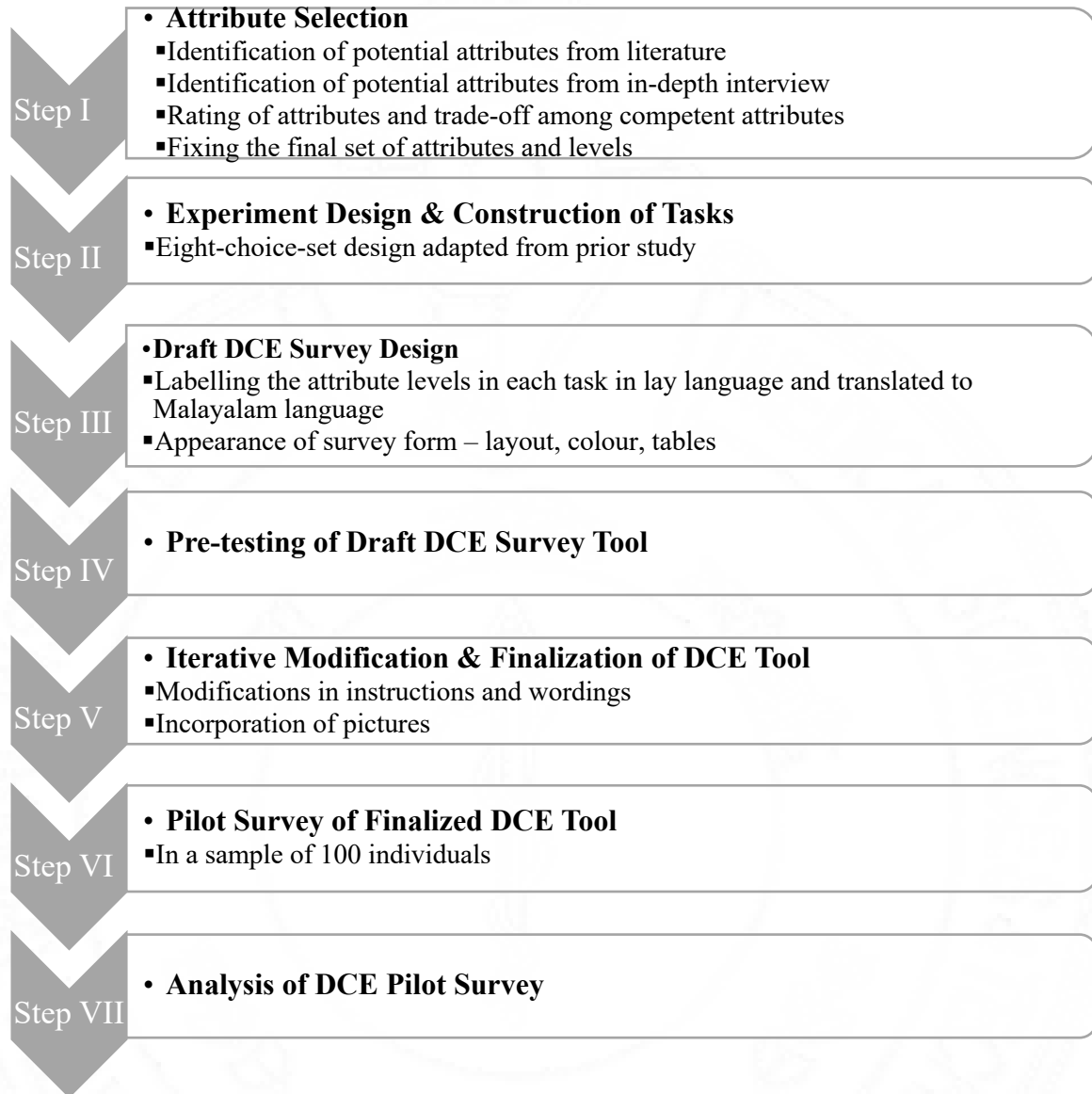
2.1.9 Data analysis

The data was manually entered in MS Excel. The data was analyzed using SPSS for Mac (Version 29.0.0.0.(241)). Summary description of the study population was done using univariate analysis. Bivariate analysis was done to check the association between recommended intake of fresh fruits and vegetables and the independent variables.

2.2 Part II - Development and Pilot testing of DCE Questionnaire

The development of DCE Questionnaire is a multi-stage process. The steps involved in the questionnaire development was informed by prior literature. Major literature sources include good research practices (Reed Johnson et al., 2013) and user guides on development of DCE (Lancsar and Louviere, 2008). The key stages are depicted below (Fig 2.1) :-

Fig 2.1 Key stages of the development and pilot testing of DCE tool in the present study



2.2.1 Step I – Attribute Selection

Attribute selection is a crucial stage of DCE Tool development.

2.2.1.1 Potential attributes identified through literature review

Literature search was conducted to identify the potential attributes related to the study. The search engines used were PubMed and Google Scholar. The following search terms were used to find studies in the literature: (food choice *or* diet *or* healthy eating *or* fruit *or* vegetable *or* fruit and vegetable) AND (factors *or* drivers *or* influences *or* motives preferences *or* pattern). The attributes obtained from literature search are listed below (Table 2.1):-

Table 2.1
Potential attributes identified through literature review

Attributes	Source
Extrinsic factors	
Cost, pricing offer/subsidy	(Karanja et al., 2022; Steenhuis et al., 2011)
Seasonality	(Spence, 2021)
Origin (locally available/imported)	(Luomala, 2007)
Quality certifications - Guarantee of standards, environmentally friendly quality parameters (low environmental impact, free from pesticides (organic), socially oriented, and sustainable agriculture)	(Cecchini and Warin, 2016; Liguori et al., 2022)
Cleanliness in shop	(Liguori et al., 2022)
Served alone/in combination with other foods	(Roe et al., 2013)
Health information labelled/unlabelled	(Cecchini and Warin, 2016)
Visibility in the shop	(Moore et al., 2016)
Packaging standards	(Moore et al., 2016)
GM labelling	(Bawa and Anilakumar, 2013)
Intrinsic factors	
Freshness Taste	(Karanja et al., 2022; Steptoe et al., 1995; Tuorila, 1990)

Colour	
Aroma	
Visual appearance/visual defects	
Texture	
Shape	
Perceived nutritional quality	(Steptoe et al., 1995)

2.2.1.2 In-depth interview to identify potential attributes

Apart from existing literatures on potential attributes, qualitative processes (either interviews or FGDs) are mentioned as pre-requisites for the finalization of attributes (Vass et al., 2017). This is to identify decision-relevant attributes tailored to the study setting. Absence of such attributes can bias the DCE result. For the present study, in-depth interviews among 14 individuals were conducted among the current residents (residing for more than three months) of Trivandrum city. The participants belonged to the age group 18 to 30 years and they were purposively selected for the study to get adequate range of the participants.

2.2.1.2.1 In-depth interview procedure

Data collection was done using in-depth interview guideline which had been prepared in English and then translated to Malayalam (See Annexures XII and XV). An information sheet and informed consent form in Malayalam were given to participants (See Annexures X, XI, XIII, XIV). Participants signed the consent form and it was then collected back. The interview guideline contained questions regarding food choices of individuals with particular focus to fruit and vegetable consumption. The interviews were around 10-15 minutes long. All interviews were conducted in person as per the time and convenience of the participants. With the permission of the participants, the interviews were recorded in

mobile phone. All interviews were conducted in either English or Malayalam language as per the convenience of the participants.

2.2.1.2.2 Attributes identified through in-depth interview

The audio recordings of interviews were directly transcribed to English. Attribute identification was based on both deductive and inductive approaches. Theme-based categorization of open codes was done in MS Excel Version 16.71. Detailed findings of the in-depth interview are given in Chapter 3. In the present section, only inputs for attribute selection are being discussed in detail.

The table below shows the themes emerged out of in-depth interview (Table 2.2).

Table 2.2

Themes (attributes) identified through in-depth interview

Themes	Number of codes
Health concern being a driving factor for fruit and vegetable consumption	14
Presence of women in the household being an influential factor (mother/spouse/other relation)	8
Taste as a matter of concern	7
Having preferences for the ways in which fruits or vegetables are incorporated in diet (Interest for a meal solely including either fruit/vegetable/juice and eating fruits or vegetables along with a heavy meal)	6
Cooked status	6
Seasonal availability	5

Cost	3
Safety concern	3
Sensory experience (refreshing feel, mood enhancer)	3
Convenience	2
Serving mode	2
Habit/familiarity	2
Attitude	1

2.2.1.3 Selection of attributes and attribute levels

Preliminary set of attributes

The major criteria for the selection of the preliminary set of attributes were as follows:-

- Attributes need to be related to the consumption aspect of the individuals rather than the purchase aspect. This is because the study objective was to know the preferences during ‘consumption’ of fruits and vegetables rather than during the purchase from market. Hence attributes like origin, quality certifications, seasonal availability, cleanliness of shop, labelling of health information, visibility in the shop, packaging standards, GM labelling, visual defects, freshness were omitted.
- Preferences to be given to those attributes that leave scope for some external health interventions. Hence most of the intrinsic/individual factors were excluded. The excluded attributes are taste perception, aroma, colour, shape, texture, perceived nutritional quality and sensory experience. Even though cost is a factor that is more relevant in the purchase angle, it was selected because of its significance in an intervention aspect. Similarly, the attribute ‘serving mode’ was included citing the relevance in an intervention perspective.

- Attributes that are easily measurable and presentable in an experimental survey form. That was why the first two dominant themes emerged out of interview were not included.

In this manner, after making necessary trade-offs between competent attributes that were emerged out of review of literature and formative qualitative study, preliminary set of attributes were fixed (Table 2.3).

Attribute levels

Previous studies suggest that simpler designs with lower numbers of levels are more balanced compared to designs having more number of levels. Also, lower the number of levels, the lesser will be the respondent burden (Szinay et al., 2021). Lower respondent burden can reduce the chance of measurement error. Taking into account these, attribute level in the present study was fixed as two levels for each attribute. Also, it was ensured that the levels in each attribute would be easily distinguishable by the respondents. If it is not the case, there is a risk that respondents perceive the difference between levels to be irrelevant and therefore ignore the attributes.

Table 2.3

Preliminary set of attributes

Sl No	Attribute (tentative)	Rationale of selection	Attribute levels
1	Cost	• Dominant factor influencing the choice of healthy diet, as per literature review • Significant in a public health intervention/policy perspective	1. Cheaper 2. Costly
2	Serving mode	• Significant with respect to dietary intervention/meal planning	1. As juice 2. As cut-pieces

3	Accompaniment	• Relevant in the angle of behavioural intervention/meal planning/cuisine culture • Found to be a dominant theme in the formative qualitative interview	1. Take fruit/vegetable alone as a main meal 2. Take fruit/vegetable as side-dish with main meal
4	Taste enhancement	• Taste was found to be a major influential factor in dietary choices, as per both literature review and in-depth interview • Since taste perception is very subjective, measures taken to enhance taste was given importance. This is also relevant in the angle of behavioural intervention	1. Will add extra sugar/salt before eating/drinking 2. Will not add extra sugar/salt before eating /drinking
5	Convenience	• The public health significance that ready-to-take items from shop often contain added sugars/salt which is not desirable • Convenience often cited as a factor influencing the choice of healthy diet, as per literature	1. Buy ready-to-take salad/juice from shop 2. Prepare the fruit/vegetable recipe at home
6	Cooked status	• A large portion of vegetable intake is through curries/semi-cooked salads, as per the analysis of interview	1. Curries/semi-cooked 2. Uncooked

As given in the table, in the preliminary plan, there were six attributes with two levels for each attribute. This was then reviewed by the principal investigator and an expert. Apart from the previously mentioned criteria for the selection of attributes, the following factors also were considered:

- Minimal inter-attribute correlation: Overlap between two or more attributes was avoided. Such overlaps affect the accuracy of estimation of main effect of a single attribute upon dependent variable (Abihiro et al., 2014). In the preliminary plan, chance of inter-attribute correlation was high in case of certain attributes. For instance, if a person picks 'juice' instead of cut pieces, it may automatically end up with opting 'uncooked' in the 'cooked status'. Similarly, in all the three attributes namely 'cooked status', 'taste enhancement' and 'convenience' (ready-to-take vegetable salads may contain extra salt), addition of extra salt was implied.
- 'Fruit and vegetable' was considered as a single unit. No separate attributes were fixed for fruit and vegetable. But the attribute 'cooked status' could be made applicable only to the consumption of vegetables and not fruits.
- Limiting the number of attributes to reduce the cognitive burden of respondents. The number of attributes can vary in DCE studies. There is no fixed rule for the maximum possible number of attributes. But it is expected to be less than ten to keep a manageable level of cognitive burden of respondents (Mangham et al., 2009). A general trend is to include five to seven attributes. Yet, in the present study, the number of attributes was reduced from six to four, in order to minimize inter-attribute correlation.

Final set of attributes

The final set of attributes was fixed based on three major considerations:

1. Relevance in the behavioural intervention or policy aspects
2. Minimal inter-attribute correlation
3. Optimum number of attributes minimizing the cognitive burden of the respondents

There were four attributes with two levels for each, in the finalised set of attributes (Table 2.4).

Table 2.4
Final set of attributes

SI No	Attribute	Levels
1	Cost	1. Cheaper 2. Costly
2	Serving mode	1. As juice 2. As cut-pieces
3	Accompaniment	1. Take fruit/vegetable alone as a main meal 2. Take fruit/vegetable as side-dish with main meal
4	Taste enhancement	1. Will add extra sugar/salt before eating/drinking 2. Will not add extra sugar/salt before eating /drinking

2.2.2 Step II - Construction of Choice tasks and Experimental design

Choice tasks

Once the attributes and levels are fixed, decision regarding the choice task needs to be taken.

Two aspects are to be considered in this stage:

1. Whether to develop full-profile DCE or partial-profile DCE
2. Whether to include an opt-out option or not

A full-profile refers to the display of all the attributes in all the alternatives in each choice set. On the other hand, in a partial-profile DCE, certain attributes won't be present in certain alternatives (Szinay et al., 2021). Partial-profile DCEs are usually used when the number of attributes are more than five. For the present study, since the number of attributes were four, a full-profile DCE was used. A full-profile DCE has an advantage that it maximises the information on trade-offs happening.

Opt-out option is opting none of the alternatives in a choice. Even though opt-out option can mimic real-world scenario, it has a limitation that it won't provide any information

regarding trade-offs happening with regards to attribute levels. Hence it was not included in the present study.

Experimental design

An experimental design is a systematic method of generating choice sets that are presented to respondents. Through this, choice sets can be specified, in a way that gives a high-quality data set from the participant's responses (Reed Johnson et al., 2013).

An ideal process of formulation of experimental design, as recommended in prior studies takes into account the following aspects (Reed Johnson et al., 2013):

- Specification of analytical model
- Whether both main effects and interaction effects of attributes are to be estimated
- If the design is labeled or unlabeled
- Number of choice tasks and blocking options to be used
- Type of design of the choice matrix to be used (Whether full factorial or fractional factorial, whether orthogonal or efficient)
- Balance between attribute levels

There is a scope of extensive discussion regarding each of the six aspects mentioned above. But due to resource constraints and limited time available to complete the study, the process of formulation of experimental design was skipped. Instead, a simple experimental design was directly adapted from existing literature (Jaynes et al., 2016).

The rationale for depending on the above-mentioned source was that the design code for a study with small number of attributes and levels (similar to that of the present study) was presented in an easy-to-simulate manner.

The characteristics of the design that was used for the present study are summarized below:

Four attributes with two levels were considered for formulating the experimental design.

Thus, a full factorial design would require $2^4 = 16$ choice combinations. This design was reordered in eight blocks each with two choice options (alternatives).

Hence at the end of this stage, an experimental design comprising eight choice tasks per individual was obtained. Each choice task contained two alternatives. Each alternative represented all the four attributes. During data collection, the participants were shown the eight choice sets one at a time and they were asked to select an alternative from each choice set. Their selection was independent from one choice set to another.

2.2.3 Step III - Draft Survey design

The survey design stage comprised formulation of all the eight tasks based on the codes for experimental design adapted. The appearance of the survey form also was decided in this stage. Appearance includes the layout, colours and graphics. A model of a single task in the initial draft DCE questionnaire formed based on this experimental design is given in the figure:

The appearance of the draft survey form was exactly the same as in the given picture. The form lacked pictorial representations or colours or additional graphics.

Fig. 2.2 Model of a single task in the initial draft DCE questionnaire

Option A

Or

Option B

Choice Task 1

Attributes	Option A	Option B
Cost	Cheaper	Costly
Mode of serving	Will take as juice	Will take as cut pieces
Accompaniment	For dinner/lunch, will have the juice only	The cut fruits/vegetables will be taken as side dish with main meal
Taste enhancement	Will add extra salt/sugar	Will not add extra salt/sugar

2.2.4 Step IV - Pre-testing of draft DCE survey form

Pre-testing was done with the following objectives:

- To know whether the respondents are interpreting the instructions and questions correctly
- To know the respondent burden during finishing the survey
- To know the time taken by each individual to complete the survey

For pre-testing, the draft DCE survey form was translated to Malayalam language by the principal investigator herself. It was then reviewed by an expert. The test was done among a convenience sample of three individuals belonging to the friend circle of the principal investigator. All the three individuals had a minimum education upto post-graduation. They belonged to the similar age group for the DCE pilot study. A print-out of the Malayalam version of the draft survey form was taken and administered to the respondents. The principal investigator detailed the task and gave the survey form to the respondents to answer each choice task.

‘Individual debriefing assessment’ was done. The principal investigator debriefed the respondents after they had completed the survey, to know their feedback and reactions

regarding each task, survey design as well as the survey process. The DCE survey form was reviewed and discussed individually by the respondents. The following three aspects were given particular attention:

- Complexity of the choice task
- Instructions and language used
- Appearance of the survey form

The inputs from the pre-testing can be summarised as follows:

All the three respondents were curious to answer the choice tasks given to them. But all of them opined that they couldn't think properly after answering three or four tasks. It was difficult to comprehend the difference in attribute levels in each task, compared to the preceding task. The term 'task' was said to be confusing for them. It was also reported that devoid of pictures/colours, the survey form appeared to be plain and monotonous which added to the feel of difficulty in answering the questionnaire.

The time taken to answer the DCE questionnaire was around 10-15 minutes

2.2.5 Step V - Iterative modification and finalization of DCE survey tool

Based on the inputs from the pre-test, the survey design was modified as follows:

- Hypothetical scenario/instruction given prior to answering the eight choice tasks was given as shown below:

“Suppose you are going to set a diet plan for yourself, giving more importance to fresh fruits and vegetables in your lunch/dinner. Imagine that your plan is for eight days. For each day, tell me which one would you choose. Two diet-plans are given for each day. You may choose one out of two plans for each day. Please give response for all the eight days.”

It was intended to set a hypothetical context, which would be more relatable to the real life scenario of the respondents

- The terms ‘Task 1, Task 2,.....Task 8’ were reworded as ‘Day 1, Day 2,.....Day 8’ for ease of understanding.
- Each attribute level in every choice task was labelled in lay language along with pictorial representation of the items to reduce confusions. The pictures made the survey form catchy and more relatable to real life scenario.

The survey form with the above mentioned changes was then reviewed by an expert and finalised to use in the pilot study.

The Malayalam version of this finalized DCE form was used for the pilot testing of the DCE tool (See Annexure IX).

2.2.6 Step VI – Pilot Survey of finalized DCE Tool

2.2.6.1 Sample size estimation for pilot survey

For the pilot testing of DCE tool, the minimum sample estimation was done based on the Rule of thumb proposed by Johnson and Orme ((de Bekker-Grob et al., 2015). As per the rule, minimum sample size required should be greater than or equal to $500 * c / (t * a)$ where c = largest number of levels for any of the attributes, t = number of choice tasks and a = number of alternatives in each task. After the finalization of the DCE tool for the present study, the parameters for the calculation of minimum sample size, based on the above equation were obtained as following:

Largest number of levels for any of the attributes = 2

Number of choice tasks = 8

Number of alternatives in each task = 2

Based on these values, the minimum sample size required was calculated to be 62.5 rounded off to 63. Literature suggests that most of the DCEs have a sample size ranging between 100 to 300. Taking into account of the practicality, the required sample size for the present DCE pilot study was fixed as 100.

2.2.6.2 Sample selection for pilot survey

The final DCE questionnaire was administered among the subsample of the cross-sectional survey to understand fresh fruit and vegetable consumption. 100 out of 280 participants of the cross-sectional survey took part in the DCE pilot study. They were selected purposively to ensure an adequate range of socio-demographic characteristics. Also, only those who had sufficient time to patiently answer the DCE questionnaire were selected for the pilot survey. Those 100 respondents filled the DCE questionnaire in addition to the questions regarding socio-demographic details and the WHO STEPS questionnaire regarding fruit and vegetable consumption.

2.2.6.3 Data collection for pilot survey

The data was collected in offline mode. A colour print-out of the DCE questionnaire was taken. No separate consent for the participation in DCE was taken from the respondents. This is because DCE differs only in terms of the methodology and the questions were regarding fruit and vegetable consumption only, which won't pose any additional ethical concerns. Prior to filling the DCE questionnaire, the principal investigator detailed to the respondents about the task to be done. Thereafter the respondents read the questionnaire themselves and answered all the eight choice tasks.

2.2.7 Step VII – Analysis of DCE Pilot Survey

The plan for data analysis of DCE pilot study was based on the review of literature regarding statistical methods of DCE data analysis and the feedback obtained from experts. The analytical model which was relied upon for the present study was regression modelling in random utility framework. The sense of utility is expressed as the preference given to various attribute levels. This preference towards different levels of attributes is reflected in the choice individuals make. Hence, choice made by the respondents was considered as the dependent variable and the attributes became the independent variables.

The utility function that formed the base of the DCE analytical model is represented in the equation given below:

$$U_j = (\beta_{\text{cost}} \times X_{j \text{ cost}}) + (\beta_{\text{serving_mode}} \times X_{j \text{ serving_mode}}) + (\beta_{\text{accompaniment}} \times X_{j \text{ accompaniment}}) + (\beta_{\text{taste_enhancement}} \times X_{j \text{ taste_enhancement}}) + \varepsilon$$

Note:

- 1) U - overall utility derived from alternative j .
- 2) β - coefficient attached to X_j estimated in the analysis and represents the part-worth utility attached to each attribute level.
- 3) ε - random error of the model which implies the unmeasured factors influencing the variation of preferences.

The intention of analysis was to test the hypotheses regarding the strength of preference for different attribute levels that were considered for the study. To decipher this relative preferences, preference weights derived from DCE data can be made useful. Hence the aim of the analysis was to estimate interpretable preference weights for the varying levels of attributes.

Deciding the appropriate statistical test was on the basis of a comparative understanding regarding various analyses used in the context of choice experiments (Hoffman and Duncan,

1988). The univariate analysis of the baseline characteristics of the study participants was done using SPSS Licensed Version 29.0.0.0 (241). Two statistical models namely Multinomial logit model and Conditional logit model were considered for the next stage of analysis. Finally Conditional logit model was found to be more appropriate. This is because Conditional logit model considers choice as the function of the attributes influencing the choice while Multinomial logit model considers choice as the function of the characteristics of the individuals who made the choice. The research interest was more regarding knowing the effects of attributes upon the choices.

Conditional logit model was done in the free trial version of XLSTAT software (XLSTAT 2023.1.6 (1410)), which had all the premium features.

CHAPTER 3

RESULTS

This chapter describes the findings of the present study in detail. The chapter comprises three sections. The first section details the findings of the cross sectional survey conducted among young adults to estimate the fruit and vegetable consumption. The second section describes the result of qualitative interviews conducted for the selection of attributes, prior to the DCE tool development. The third section details the output of the analysis of DCE pilot study.

3.1 Cross sectional survey to understand fruit and vegetable consumption

The sample size calculated for the survey was 280. Non-response rate was zero percent.

3.1.1 Baseline characteristics of the study population

The respondents' age ranged between 18 to 30 years. Mean age of the study population was 23.63 years with standard deviation of 3.53. Majority of the participants (around 60 percent) were having age less than 25 years. The number of members in each household ranged between one and nine. The average number of household members in each household was 4.21 with standard deviation 1.26. Around 56 per cent of the participants were females. Approximately one-fifth of the participants were either married or living together and the rest were either unmarried or divorced or widowed. More than 80 per cent of the respondents had minimum degree level educational qualification. Majority of the participants (approximately 70 percent) held APL ration card (Table 3.1).

Table 3.1**Sociodemographic characteristics of the study population of cross-sectional survey**

Variable	Category	Frequency n (%)
N = 280		
Sex	Female	157 (56.1)
	Male	123 (43.9)
Age (completed years)	18 - 24	169 (60.4)
	25 - 30	111 (39.6)
Relationship status	Married	59 (21.1)
	Never married	220 (78.6)
	Divorced	1 (0.3)
Educational status	Primary school completed	1 (0.3)
	Higher Secondary completed	84 (30)
	Degree completed	149 (53.3)
	PG & above	46 (16.4)
Ration card type	APL	201 (71.8)
	BPL	70 (25)
	Anthyodaya	1 (0.4)
	No ration card/Don't know	8 (2.8)
Household income category*	Less than or equal to 10000 Rs	101 (36.4)
	10001 – 50000 Rs	154 (55.6)
	50001- 100000 Rs	19 (6.9)
	Greater than 100000 Rs	3 (1.1)
Occupational status	Student	132 (47.1)
	Home maker	22 (7.9)
	Currently working	87 (31)
	Unemployed	39 (14)

*(Note: * N = 277)***3.1.2 Consumption of fruits and vegetables among the study population**

Some of the respondents reported that they never consumed fresh fruits or vegetables in a typical week. One-third of the participants mentioned that they consume some amount of

fresh fruits in all the seven days in a typical week. This figure was higher in the case of vegetable intake. Approximately 60 percent of the respondents said that they eat some amount of vegetables in all the seven days in a week (Table 3.2).

Table 3.2
Frequency of consumption of fresh fruits and vegetables

	Number of days fruits are consumed in a typical week	Number of servings of fruits eaten in one of those days	Number of days vegetables are consumed in a typical week	Number of servings of vegetable eaten on one of those days
Mean	4.82	1.62	5.64	1.80
Std. Deviation	2.145	0.796	2.150	0.821
Mode	7	2	7	2
Minimum	0	0	0	0
Maximum	7	5	7	7

Each participant's average daily consumption of fruit was calculated by multiplying the number of days they typically eat fruit by the number of servings they consume on one of those days, then dividing the result by seven. Similarly, the average daily intake of vegetables for each participant was also estimated. By adding the average daily intake of fruits and vegetables, the number of servings of fruits and vegetables together was determined. (Table 3.3).

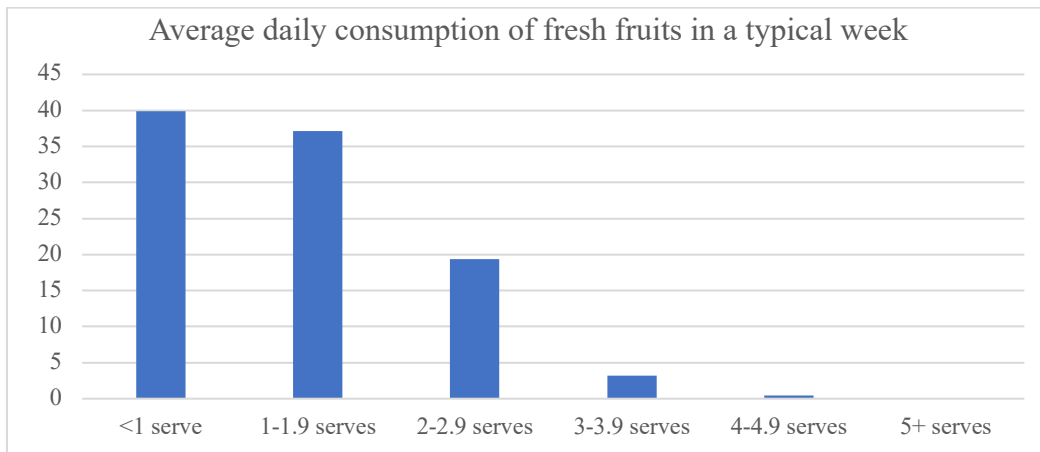
Table 3.3
Average daily consumption of fresh fruits and vegetables

	Mean serving	Standard deviation
Average daily consumption of fresh fruits in a typical week	1.19	0.76

Average daily consumption of vegetables in a typical week	1.57	0.87
Average daily consumption of both fresh fruits and vegetables together in a typical week	2.77	1.34

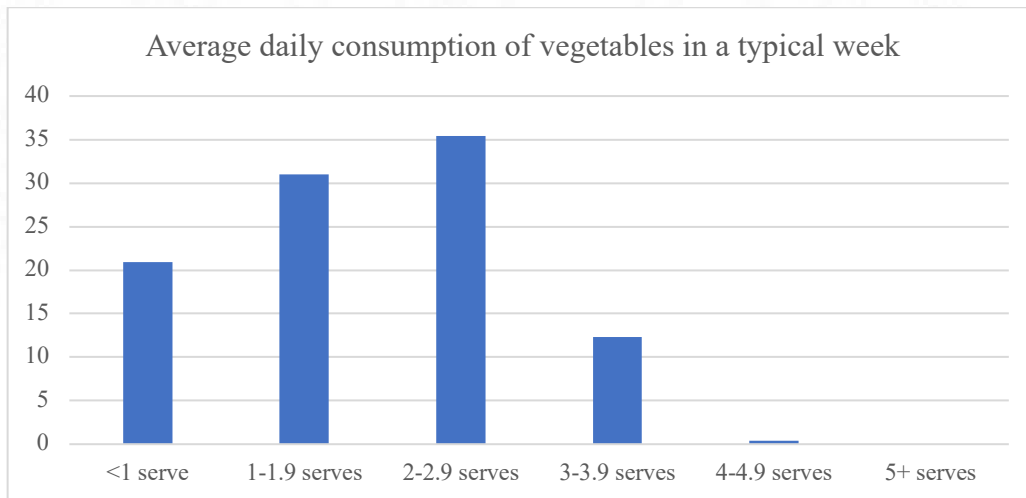
Fig. 3.1 shows the estimated proportion of the study population that consumed the daily recommended amount of fruits. More than three fourth of the respondents consumed on an average, less than two servings of fruits per day in a typical week. On the other hand, the average intake of vegetables per day was slightly more (Fig. 3.2). Near half of the study population consumed on an average two to four servings of vegetables per day. While around 40 per cent of the respondents consumed less than one serving of fruit, the proportion of study population consuming less than one serving of vegetables was around 20 per cent. Considering the consumption of both fruits and vegetables together (per day in a typical week), more than half of the participants had an average daily intake of two to four servings (Fig. 3.3). The proportion of respondents who reported daily intake of recommended level of fresh fruits and vegetables (more than or equal to five servings) was 7.2 percent.

Fig. 3.1



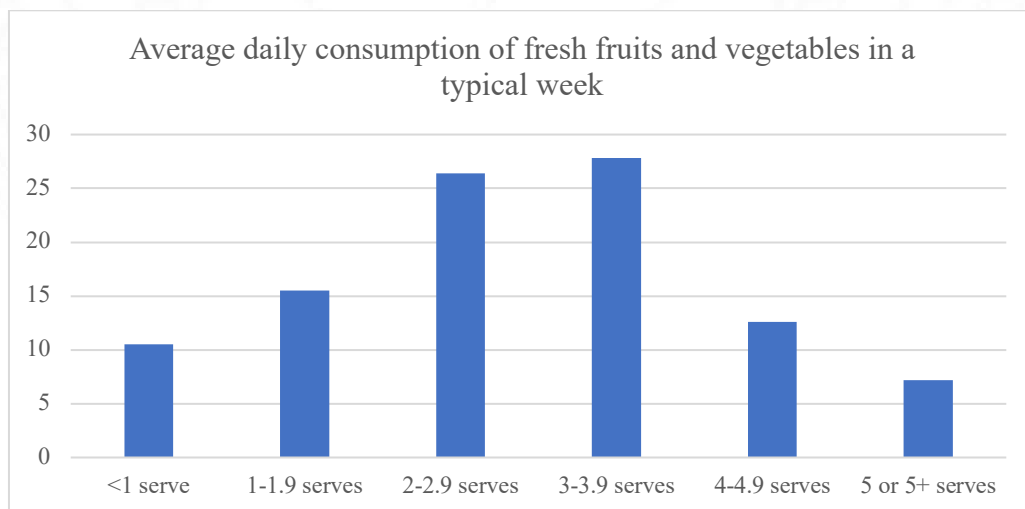
(X axis – number of servings, Y axis – percentage of study participants)

Fig. 3.2



(X axis – number of servings, Y axis – percentage of study participants)

Fig. 3.3



(X axis – number of servings, Y axis – percentage of study participants)

3.1.3 Factors associated with the consumption of fruits and vegetables

To identify the factors associated with the consumption of fresh fruits and vegetables, bivariate analysis was done. Several independent variables were recoded and chi square test was performed. P value below 0.05 was considered as significant. The variable 'age' was recoded into two categories such as below 25 and above or equal to 25 years. Similarly, for the variable 'educational status', education level up to higher secondary were clubbed together. Monthly household income was also grouped into three categories such as below 10000 INR, 10000 to 50000 INR and above 50000 INR. With regards to the variable 'occupation status', all job categories excluding home makers were clubbed under 'currently working'. Also, the average daily consumption of fruits and vegetables was grouped into two categories such as 'Below average (less than 2.77 servings/day)' and 'Average or above average (greater than or equal to 2.77 servings/day)' (Table 3.4).

There found to be a statistically significant association between relationship status and the amount of consumption of fresh fruits and vegetables. People who were either married or living together appeared to eat more fresh fruits and vegetables compared to others. Similarly, the variables education status, occupation and monthly household income were having a statistically significant association with the level of daily consumption of fresh fruits and vegetables (Table 3.4).

Table 3.4

Factors associated with fresh fruit and vegetable consumption

Variables		Average daily consumption of fruits & vegetables				P value
		Below average (<2.77 servings/day)		Average or above average (≥ 2.77 servings/day)		
		n	%	n	%	
Sex						
	Female	74	47.74	81	52.26	0.436
	Male	64	52.46	58	47.54	
Age category						
	18 - 24	138	82.63	29	17.37	0.200
	25 - 30	84	76.36	26	23.64	
Relationship status						
	Married	21	35.59	38	64.41	0.013*
	Never	117	53.67	101	46.33	
	Married/separated/widow(er)					
Educational status						
	Upto Higher Secondary	34	40.00	51	60.00	0.004*
	Graduate	73	49.32	75	50.68	
	PG & above	31	70.45	13	29.55	
Monthly household income (In INR)						
	<10000	18	33.96	35	66.04	0.025*
	10000 - 50000	108	53.20	95	46.80	
	>50000	13	61.90	8	38.10	
Occupational status						
	Student	71	53.79	61	46.21	0.017*
	Home maker	5	22.73	17	77.27	
	Currently working	38	45.24	46	54.76	
	Unemployed	24	61.54	15	38.46	

Note: N =277, *p value < 0.05 (statistically significant)

Row percentages are given in the table

3.2 In-depth interview to explore attributes for DCE tool development

In -depth interviews were included as a necessary step for the identification of attributes for the development of DCE questionnaire. Interviews were conducted by the principal investigator with the help of an in-depth interview guideline. The total number of interviews conducted was 14. The audio records of the interviews were transcribed directly to English, by the principal investigator. Deductive and inductive approaches were used for the analysis.

The qualitative data from the interviews were transcribed verbatim and analysed manually.

The profile of the study participants of the in-depth interviews are given below (Table 3.5):

Table 3.5

Profile of the study participants of the in-depth interviews

Sl.No	Name (Pseudonym)	Age	Gender	SES	Remarks
1	Feroz	30	Male	APL	Shopkeeper, have two kids, staying with parents and spouse
2	Ashish	27	Male	APL	Government employee (Secretariat staff), staying with parents and spouse
3	Surabhi	23	Female	BPL	Completed Post-graduation, unmarried, staying with parents
4	Jaya	26	Female	BPL	Home maker, have a daughter, staying with husband and in-laws
5	Naina	24	Female	APL	Office staff in a private institute, not married
6	Vijith	26	Male	APL	Preparing for government exams, not married
7	Athira	30	Female	APL	Tele caller, have a daughter, living with mother and sister, spouse abroad
8	Anupama	30	Female	APL	Administrative manager in an Edtech firm, staying with friends, spouse abroad
9	Lekshmi	22	Female	APL	Doing post-graduation, staying with parents
10	Shah	28	Male	APL	Teacher, unmarried, staying alone
11	Susanth	30	Male	APL	Tutor, married, staying away from family for job needs
12	Taniya	24	Female	APL	Post-graduation completed, seeking job, unmarried

13	Renu	23	Female	APL	Preparing for government exams, unmarried
14	Anoop	30	Male	APL	Doing PhD, living with spouse

3.2.1 Data analysis – Qualitative data

The data was cleaned and open coding of the transcripts was done separately by the principal investigator and the guide. A thematic analysis was done. Codes were grouped into themes and categories related to the dietary preferences, fresh fruits and vegetable intake and the meaning of healthy diet to the young adults. The interpretations are presented in a descriptive mode and quotes that signifies a theme have been added to highlight the point.

I. Themes related to dietary preferences

- a. Convenience
- b. Habituation
- c. Health concern
- d. Subjective likes/dislikes
 1. Taste
 2. Ambience
 3. Pleasure/mood
- e. Emotion (happiness/nostalgia)
- f. Market compulsions

Subjective factors were prominent in the general dietary preferences. Taste and mood were the two aspects that were most commonly mentioned regarding the dietary choices.

Anoop: "Tasty food makes me happy...there is a conflict between healthy and tasty...even though my brain says eat healthy my mind always craves for tasty food"
Anupama: "Homely food now seems to be very boring...up to certain age we were eating that only"

The other theme that emerged in relation to the dietary preferences is that related to routine/habituation. Despite being aware of their nutrient requirements, people tend to eat particular food just because they are accustomed to that.

Ashish: "Not because of the taste...I'm not used to eating from outside.....Generally I have my food from home which is traditional food... the food that you get from outside is not like that...that's why".

The preference for a particular kind of food was also attached to emotions that related to happiness and even nostalgia.

*Feroz: We should eat foods that give us happiness..... Food is happiness
Athira: I had my schooling outside Kerala.....so since I stay at home these days, I prefer food made by mother.....I would eat as much as I get if it is homemade food.*

Market compulsions also emerged as a theme in the kind of food that people eat and limits the preferences in some cases.

Sushanth: "In KFC and similar shops, they give some combo offers...then we are compelled to take pepsi or coco cola...they do not give you a package devoid of pepsi/coco cola..."

II. Themes related to the meaning of 'healthy' and 'unhealthy' diet

- a. Known ingredients/nutrient content
- b. Effect on health
- c. Sensory experience

Individuals had their own, clear sense of distinction between a food item that is 'healthy' and 'unhealthy'. They had their own knowledge regarding what makes a food item 'healthy' and 'unhealthy'. A balanced, moderate and diverse diet was considered healthy and the opposite was unhealthy. Fruits, vegetables, nuts, juice, muesli were the items that were reported as 'healthy'. On the other hand, items like burger, pizza, mayonnaise, "kuzhimanthi" (Arabic chicken rice) and Coco Cola were mentioned as 'unhealthy'.

Shah: "Foods that are rich in protein.... with less carbohydrate, and more proteins like, fruits, vegetables are healthy ...chicken is protein rich....so food like Alfaham... I consider them healthy"

There was a general opinion that hotel foods were unhealthy and home-made food was healthy. The preference for home-made food was mainly because ingredients could be added based on our nutrient requirements and additives or taste enhancers were not added. Addition of unhealthy ingredients, safety concerns and lack of hygiene were the factors

that made hotel food less preferred. Despite these concerns, taste, convenience and ambience attracted people towards hotel food.

Apart from the nutritive value, individuals perceived the health significance of food based on the visible effects it would have on their bodies.

Taniya: “One thing is prevention of diseases.....healthy food keeps our body healthy... I have noticed that when I eat food from outside I get acne...so such food are unhealthy ...whereas healthy foods keep diseases at bay and are useful for overall health”

III. Themes related to preferences in fruit and vegetable consumption

The themes related to the intake of fruits and vegetables could be categorized into intrinsic and extrinsic. Intrinsic factors are factors that are subjective (confined to individuals) and extrinsic factors are those that can be related to the food environment.

a. Intrinsic

1. Awareness
2. Taste
3. Freshness
4. Accompaniment
5. Serving mode
6. Habit
7. Attitude
8. Convenience
9. Experience

b. Extrinsic

1. Cost
2. Seasonal availability
3. Safety concern
4. Familial influence
5. Social/external influence

Individual factors had considerable influence on the fruits and vegetable consumption. Taste was emerged as a major theme that influenced the fruit and vegetable consumption. The opinion regarding consumption of a full fruit or vegetable meal for either lunch or dinner was positive. Individuals believed that eating fruits and vegetables in that way could improve the consumption. However, there was only one person who consumed fruits and

vegetables in such a manner. Cost concerns and not being used to such a diet culturally were mentioned as the limiting factors.

The other major individual factor that emerged regarding people's preferences regarding fruit and vegetable intake was their perceived notions of the effect of fruits and vegetables on the body. Having had a positive experience in the past also seemed to affect their fruit and vegetable intake.

Anupama: "When we shift to a diet based on fruits and vegetables, that kind of tiredness after eating won't be there...I tried fruit diet once before...that time I got a refreshed feel".

Feroz: "Healthy diet won't make our body obese. Also, we will get good sleep if we eat fruits and vegetables, before going to bed. I usually don't do these things but experienced so when I eat once in a while. Healthy foods are like this..That gives only what is essential for our body.

There was an emphasis on being aware of the healthier options and health benefits of fruits and vegetables. Many times, the choice of eating fruits become a passive process because of the availability, familiarity and easy access. There were no conscious decision making in case of eating fruits in such cases.

Naina: "In our villages, what we see is always there will be a 'vazhakkula' or something else like guava are available. Just because they are available, we take those and eat. we don't think much about their benefits...like this fruit is good in this climate".

Apprehensions regarding the safety of fruits and vegetables that are available in market emerged as a deterrent. Safety concern was mainly related to the use of chemical pesticides. Some individuals had trust in the label 'organic' while others did not have that

Feroz: "These organic labels... many often have just the label...they may use some pesticide sprays ...Such things are available plenty in our city...but we can't trust them".

The fruit and vegetable consumption at home mainly centered around the woman/women in the family. Women being in the role of wife/partner and mother had greater influence on the eating pattern of men or children in the family. There was an unsaid obligation for women to procure or prepare or serve fresh fruits and vegetables. Married men were dependent on their spouses and unmarried men thought that without a spouse they could not consume adequate amounts of fruits and vegetables since they will have to cut and prepare those.

Feroz: "But at home, I don't get salads as I wish (looking and smiling at his wife).. You understood.....didn't you. I can have such things only if they (hinting at his wife) cut it and give it (laughing)"

Anoop: "I eat those(fresh fruits and veggies) when my wife gives it to me..(smiling at his wife)...I'm fully dependent on my wifebecause she manages the grocery

Shah: " I eat very less vegetables because of the taste issue...the only thing I eat is bitter gourd..eating boiled vegetables is not possible also since I'm single and staying alone".

Similarly, mothers were thought to be responsible for the fruits and vegetable consumption needs of the younger family members.

Athira: "I include such things (fruits and veggies) in our diet daily...since we eat homely food, mother give us such items... in a healthy way. She ensures that my child also gets the kind of healthy food that she can consume. My mother includes leafy vegetables in our diet daily.."

The fruit and vegetable intake of women is influenced by their nurturer/carer role. Women tend to not exercise their own choices and eat fruits and vegetables if their kid likes it. But similar kind of preference did not emerge from a male parent.

Jaya: "My daughter likes it much..so we buy fruits regularly....Mother (mother-in-law) gives these to my daughter in the evening...So..I also eat them at that time"

External influences like social functions and local dietary practices were other themes that influenced fruit and vegetable consumption.

Feroz: “But the problem is that we may have to attend several wedding functions in a month. When we go there, even though we control ourselves..see since 4 to 5 days, I am eating lot of items like mutton, chicken biryanis. Before that it was ‘perunnal’, ‘nombu’. Then, I myself felt that I was getting weight”

Athira: “When we shifted from Bombay to Trivandrum...the culture there in Bombay was that schools have a proper time table for eating.....one day they give full priority to fruits and vegetables in a week. Since she (her daughter) got used to that, she is okay..but that culture is not here in Kerala”.

3.3 DCE pilot study to elicit preferences during fruit & vegetable consumption

DCE questionnaire was administered among a subsample of the participants of the survey regarding fruit and vegetable consumption. The number of participants was 100 and they were purposively selected from the respondents of the cross-sectional survey. Univariate analysis to describe the sample population was done in licensed version of SPSS (SPSS Version 29.0.0.0 (241)). Further analysis of the data was completed using free trial version of XLSTAT software (XLSTAT 2023.1.6 (1410)). Conditional logit model was applied.

3.3.1 Socio-demographic characteristics of the participants of DCE pilot study

The table 3.6 describes the baseline characteristics of the sample for DCE pilot study.

Table 3.6

Socio-demographic characteristics of the participants of DCE pilot study

Variable	Category	Frequency n
N = 100		
Sex	Female	57
	Male	43
Marital Status	Married	23

	Never married	77
Educational status	Higher Secondary completed	35
	Degree completed	60
	PG & above	5
Ration Card Type	APL	55
	BPL	45

3.3.2 Preference weight estimates from Conditional logit model with choice of the individual as dependant variable

Preference weight estimates (coefficients) implies the relative importance of a particular attribute over the range of levels included in the experiment. As expected, costlier items (fresh fruits and vegetables) had a considerable negative preference over (have high negative preference weights than) cheaper items. Also, there was a substantial high preference for consuming fresh fruits and vegetables as side dish along with main meal rather than intaking them as a full meal (either lunch or dinner). On the other hand, the difference in the preference between items served as juice and cut pieces/salads was negligible and not statistically significant. Adding no any extra salt or sugar was preferred over adding extra salt or sugar for taste enhancement. But this difference in preference was negligible and not statistically significant (Table 3.7).

Table 3.7

Relative preference weight estimates based on Conditional logistic regression with choice of the individual as dependant variable

Attribute	Level	Standardized coefficient	Standard Error	Chi square	P value
Cost	L1- Cheaper	0.000	0.000	18.913	< 0.0001
	L2 - Costly	-0.224	0.051		
Mode of serving	L1 – As cut pieces/salads	0.000	0.000	1.362	0.243
	L2 – As juice	0.060	0.052		

Accompaniment	L1 – As main meal	0.000	0.000		
	L2 – As side dish along with main meal	0.376	0.052	52.832	< 0.0001
Taste enhancement	L1 – Will not add extra salt or sugar	0.000	0.000		
	L2 – Will add extra salt or sugar	-0.061	0.056	1.204	0.272

Note: Number of observations: 1600

Fig 3.4 Preference weight estimates based on Conditional Logit Model

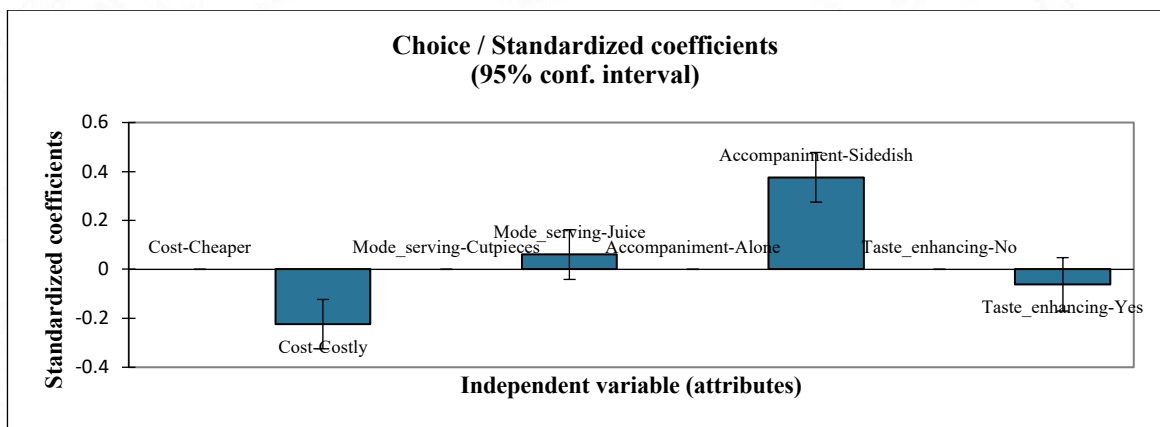


Table 3.8 Preference estimates from Conditional logistic regression represented in terms of Odds Ratio

Attributes	Levels	Odds Ratio	95% CI for Odds Ratio	P value
			Lower	Upper
Cost	Cheaper	1		
	Costly	0.64	0.52	0.78
Mode of serving	As cut pieces/salads	1		
	As juice	1.13	0.92	1.38
Accompaniment	As main meal	1		
	As side dish along with main meal	2.12	1.73	2.60

Taste enhancement	Will not add 1 extra salt/sugar				
	Will add extra salt/sugar	0.89	0.71	1.40	0.272

3.3.3 Validity and reliability of the design

Assessing and reporting the validity and reliability of the design was not included in the scope of the present DCE pilot study. Hence no deliberate planning was there to assess the validity and reliability. Yet, taking reference from existing literature (Sarikhani et al., 2021), the following comments can be made regarding the content validity:

- The qualitative method (in-depth interview) used in the development of attributes and levels ensured that items that were included were relevant to a majority of the respondents.
- During in-depth interview, the principal investigator developed expectations regarding the effect of each attribute level on the preferences of individuals. This could be considered an a priori hypothesis. The a priori hypothesis was checked by examining the sign of estimated parameters derived through Conditional logit model (Table 3.9).

Table 3.9

Comparison of a priori hypothesis with the estimated preferences

A priori hypothesis	Estimated parameter	Remarks
There will be a negative preference for high-cost items	-0.224	Response validates the hypothesis

Individuals prefer to take fruits and vegetables along with main meal. Majority won't prefer to take those as a full meal since they are not habituated to eat like that.	0.376	Response validates the hypothesis
Preference for juice over cut-pieces or salads can't be predicted since there was a mixed opinion. Yet, since the data collection happened during summer season, juice may be preferred over cut-pieces	0.060	Response validates the hypothesis
Majority of individuals prefer adding extra salt or sugar while consuming fruits and vegetables, since taste is a major concern	-0.061	Response is opposite to the hypothesis

Content validity implies the extent to which the findings are in line with a priori hypotheses (Sarikhani et al., 2021). As shown in the table, except one, all other estimate parameters match with the a priori hypothesis, suggesting a reasonably good content validity.

CHAPTER 4

DISCUSSION

4.1 Summary of the study

The study aimed to assess the fresh fruits and vegetable consumption among young adults in Trivandrum city and understand the preferences related to the consumption of fresh fruits and vegetables using a mixed methods approach.

The cross-sectional survey quantitatively estimated the current status of consumption of fresh fruits and vegetables in the study population. A Discrete Choice Experiment (DCE) method was used to elicit the preferences related to the consumption of fruits and vegetables. The DCE was developed based on the attributes identified through in-depth interviews with the young adults. Since it is a comparatively new methodology in the field of dietary preferences, there were no existing DCE tools to explore the preferences in fruits and vegetable intake. Hence a DCE tool had to be developed based on the findings of the qualitative data as well as the review of existing literature. The qualitative research component also provided rich insights regarding the themes related to people's fruit and vegetable consumption.

The average daily intake of fresh fruits and vegetables in the study population (2.77 servings per day) was found to be far lower than the recommended daily intake of five servings per day. The percentage of population who consumed the recommended daily intake of fresh fruits and vegetables was only 7.2 per cent which was lesser than 13.9 per cent that was reported by a previous study in the Kerala carried among adult population (Thulaseedharan et al., 2021). This proportion was closer to the finding that 7 per cent of young adults

adhered to the recommended daily intake of fresh fruits and vegetables in a study done in the USA (Franko et al., 2008).

The Discrete Choice Experiment was done to understand the attributes that influences the preferences of young adults related to fruit and vegetable consumption. It indicated that there was a preference to consume fruits and vegetables as a side dish/drink along with the main meal rather than eating them alone for lunch/dinner and the cost of the fruits and vegetables was an important attribute influencing the choice of fruits and vegetables.

There was a significant difference in the consumption of fruits and vegetables among those who were employed and unemployed. Those who were unemployed had a lower intake of fresh fruits and vegetables compared to the employed ones. This could be related to the finding from the DCE that cost was a factor that was related to the choice of including fresh fruits and vegetables in the diet. Other studies also suggest that unemployment can negatively impact the healthy food choices (Smed et al., 2018).

The survey finding indicated that being married was significantly associated with better fruit and vegetable intake. This finding is in line with the findings of previous studies that being married or in a living arrangement with a partner was associated with more healthy dietary behaviours including fruit and vegetable intake (Vinther et al., 2016). Many sociological and psychological factors are thought to explain this including the sense of meaning and obligations in life, spousal control and concern that helps in being responsible and adhering to healthy behaviours etc. Studies have indicated this association among men and women but were mostly stronger for men.

The finding from the qualitative study also indicates that there is an expectation among the men as well as sons/daughters that preparation of fresh vegetables and fruits for consumption was the responsibility of the mother or wife in the family. Home-makers however had an above average level of fruit and vegetable intake and may be related to the fact that it is the women who prepares the fresh fruits and vegetables for consumption.

Contrary to the general expectation, people having higher educational qualification tend to have lower intake of fruits and vegetables. Those who had an education level up to post-graduation or above had less than average intake of fresh fruits and vegetables. This could be due to the fact that those in the lower educational group could be mostly students who would be staying with their parents. Their stay with the family could have a positive impact on their intake of fruits and vegetables, as indicated by the qualitative study. On the other hand, those having higher educational qualification may end up with better job and high disposable income which they spent on unhealthy dietary choices, or they might be in search of job and are remaining unemployed.

4.2 Strengths of the study

- The consumption of fruits and vegetables was measured using standardised questionnaire developed by the WHO for the purpose with show cards indicating the standard serving sizes.
- This is one of the first attempts according to our knowledge to apply the DCE method in India to understand the attributes that influence dietary choices - the preferences of young adults related to fruit and vegetable consumption in the current study.

- By attempting to detail a thorough process for creating the DCE survey and outlining the findings of applying a DCE tool, this study contributes to the understanding on the development of DCE and its use in studying dietary choices.
- Regarding DCE pilot study, the major strength was that attributes and levels of the DCE were developed through qualitative studies (In-depth interview and pre-testing) which are considered a good practice.
- Inclusion of both quantitative and qualitative approaches facilitated a broader understanding regarding the fruits and vegetable consumption and the underlying factors.

4.3 Limitations of the study

- For the development of DCE tool, experimental design process had to be kept to the minimum due to constraints in time and resource limitations. Also, the analysis of DCE data was only focussed on the effects of attribute levels on the preferences of participants. The effect of socio-demographic characteristics on their preferences were not explored.
- The DCE pilot study was carried out in a single geographical area (Trivandrum city) with limited sample size and this could have limited the representation of the population and the generalisability of the findings.
- Since the DCE was based on hypothetical choices and the respondents do not choose the food in real, this could have led to hypothetical bias, which is commonly associated with DCEs
- The process of thinking through and selecting the preferences in the DCE could have been cognitively challenging for some respondents. Fruits and vegetables were presented as a single item and no separate choice task was given for fruits and vegetables. There is a possibility that compulsion to state preferences

regarding both fruits and vegetables together contributed to the cognitive burden of respondents. There can be differences in the way choices regarding fruits and vegetables are made.

- Detailed remarks on the validity and reliability of the DCE tool couldn't be given, due to the limitations

4.4 Conclusion

Intake of fresh fruits and vegetables among young adults and children are much below the recommended daily amounts. The findings of the DCE indicate that young adults had a higher preference for less costly fruits and vegetables and preferred to consume them as side dishes probably due to the existing food culture and cuisine. This study is one of the first to use DCE as a method to understand dietary choices among adults in India. Larger DCE studies on dietary choices and preferences, with bigger sample size and higher number of attributes and levels could be helpful in exploring dietary preferences in detail and developing successful dietary interventions.

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ANNEXURE I

PARTICIPANT INFORMATION SHEET **Survey among Young Adult Individual (18-30 years)**

Sir/ Madam, Namaskaram, I am Dr Sandra K.N, studying for Masters of Public Health (MPH) at Achutha Menon Centre for Health Sciences Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. I am planning to conduct a research titled '**Understanding fresh fruit & vegetable intake choices among young adults in Trivandrum City, Kerala: Development of a Discrete Choice Experiment**' as a part of the course requirement for postgraduate studies (Masters of Public Health). This consent form may contain terms and information that you do not understand. Please ask me if any words or information is not clearly understood by you.

Purpose of the study

There is a growing concern about the rise of lifestyle diseases in Kerala. Unhealthy diet is identified as one of the major risk factors for lifestyle diseases. WHO recommends regular intake of fresh fruits and vegetables to manage such diseases. Previous widescale studies in Kerala showed poor adherence to the recommended intake of fruits and vegetables. This may get worse among urban young adults due to multiple reasons. This study aims to assess fruit and vegetable consumption among young adults in Trivandrum city. Also, the factors influencing the consumption of these items will be studied by developing a new experimental tool for the same.

Procedure

This survey would take approximately 20-30 minutes of your valuable time. You will be asked questions in private. Questions will be related to your personal details and diet habits especially fruit and vegetable consumption. You won't be requested to undergo any kind of physical measurements or laboratory tests.

Why have you been invited?

You are invited for this study since you fulfill the inclusion criteria defined for this survey. Your ward was selected randomly by a lottery system.

Voluntary participation

Your participation in this study is entirely voluntary and you are also free to decide to withdraw permission to participate in this study at any time. If you do so, this will not affect you in any way.

What are the possible risks of participating in this study?

It is not anticipated that there are any risks to participation in this study except the time you spend for this.

What are the possible benefits of taking part in this study?

There are no direct benefits to you from the study. Once the study is over, the findings will be useful for developing experimental studies or policies that helps in boosting community level healthy eating interventions in future.

Cost and financial benefit

There will be no costs to you for participating in this study. And you will not be paid for your participation in this study.

Confidentiality

You will be interviewed in private. All information related to you will be kept confidential and at no stage, your identity will be revealed. A respondent identification number (RIN) will be assigned to each participant that will help in maintaining the confidentiality of the data collected. Access to this number will be restricted to those analysing the data only. Participant confidentiality will be safeguarded during and after the study. The study data will be stored for a period of 3 years from the date of data collection.

Results of the research study

The final thesis report will be submitted for the fulfilment of the requirements of the MPH degree. The thesis will be published in Dspace, SCTIMST. The findings may get published as a working paper and presented in scientific conferences and may be shared in appropriate scientific journals.

Contact information

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

Principal Investigator: Dr Sandra K N
MPH (2021-2023 Batch)

AMCHSS, SCTIMST, Trivandrum Thiruvananthapuram – 695011, Kerala, India Mobile:
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Signature of Principal Investigator:

Name of Supervisor: Dr. Manju R Nair (Scientist 'D', SCTIMST, Trivandrum)

For any clarifications regarding the study's ethical clearance, you may contact the Member Secretary of the SCTIMST- IEC. The phone number is 0471-2524689 and the email id is iec.mem.sec@sctimst.ac.in

ANNEXURE II

INFORMED CONSENT(Survey)

I have read/been read out the information in the information sheet. The nature of the study and my involvement has been explained and all my questions have been answered satisfactorily. By signing the consent form, I indicate 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 disclosed. Further information will not be released to third parties or published. I have been informed who should be contacted if the need arises. I have been given a copy of the information sheet for my reference.

Participant's name:

Participant's signature/ thumb impression:

Date:

Interviewer's name:

Interviewer's signature:

Date:

ANNEXURE III

Understanding fresh fruit & vegetable intake choices among young adults in Thiruvananthapuram City, Kerala: Development of a Discrete Choice Experiment

Survey regarding diet among young adults in the age group 18-30 years

INTERVIEW SCHEDULE FOR SURVEY

Participant ID:

Ward No.

House No.

SECTION 1- SOCIODEMOGRAPHIC DETAILS

SECTION 1- SOCIODEMOGRAPHIC DETAILS		
<i>I would like to know some details regarding you and your household</i>		
Q.No	Question	Response
1	Name of the respondent	
2	Sex of the respondent	1. Male 2. Female 3. Others
3	What is your age? (completed age as of your last birthday)	 years
4	What is your current marital status?	1. Never married 2. Currently married 3. Cohabiting 4. Separated/divorced/widowed
5	What is the highest level of education you completed?	1. No formal education 2. Primary school completed 3. High school completed 4. Graduate completed 5. Post graduate degree and above
6	What is your current occupation?	1. Professional 2. Clerical 3. Manual labourer 4. Self employed 5. Home maker 6. Unemployed 7. Student 8. Others (specify)
7	What is the monthly income level of your household?	
8	What is the type of ration card held by your family?	1. Antyodaya 2. BPL 3. APL

		4. No ration card
9	How many people including yourself live in your household?	

SECTION 2 – DIET

SECTION 2.1 – FRUITS & VEGETABLES		
<i>The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.</i>		
1	In a typical week, on how many days do you eat fruit ? (USE SHOWCARD)	Number of days Don't know 77
2	How many servings of fruit do you eat on one of those days? (USE SHOWCARD)	Number of days Don't know 77
3	In a typical week, on how many days do you eat vegetables ? (USE SHOWCARD)	Number of days Don't know 77
4	How many servings of vegetables do you eat on one of those days? (USE SHOWCARD)	Number of days Don't know 77
SECTION 2.2 – DIETARY SALT		
<i>With the next questions, we would like to learn more about salt in your diet. Dietary salt includes ordinary table salt, unrefined salt such as sea salt, iodized salt, salty stock cubes and powders, and salty sauces such as soy sauce or fish sauce (see showcard). The following questions are on adding salt to the food right before you eat it, on how food is prepared in your home, on eating processed foods that are high in salt such as [insert country specific examples], and questions on controlling your salt intake. Please answer the questions even if you consider yourself to eat a diet low in salt.</i>		
5	How often do you add salt or a salty sauce such as soy sauce to your food right before you eat it or as you are eating it? (SELECT ONLY ONE) (USE SHOWCARD)	1. Always 2. Often 3. Sometimes 4. Rarely 5. Never 77. Don't know
6	How often is salt, salty seasoning or a salty sauce added in cooking or preparing foods in your household?	1. Always 2. Often 3. Sometimes 4. Rarely

		5. Never 77. Don't know
7	How often do you eat processed food high in salt ? By processed food high in salt, I mean foods that have been altered from their natural state, such as packaged salty snacks, canned salty food including pickles and preserves, salty food prepared at a fast food restaurant, cheese, bacon and processed meat <i>(USE SHOWCARD)</i>	1. Always 2. Often 3. Sometimes 4. Rarely 5. Never 77. Don't know
SECTION 2.3 – DIETARY OIL		
8	What type of oil or fat is most often used for meal preparation in your household? (Select only one)	1. Mustard oil 2. Coconut oil 3. Groundnut oil 4. Sunflower oil 5. Soyabean oil 6. Palm oil 7. Vanaspati oil 8. Pure Ghee 9. Butter 10. Can't decide/Not in particular 11. Other (specify)

ANNEXURE IV
Show-Card for STEPS Survey

Typical Fruit and Vegetables and Serving Sizes

VEGETABLES are considered to be:	1 Serving =	Examples
Raw green leafy vegetables	1 cup	Spinach, salad, etc.
Other vegetables, cooked or chopped raw	½ cup	Tomatoes, carrots, pumpkin, corn, Chinese cabbage, fresh beans, onion, etc.  
Vegetable juice	½ cup	

FRUIT Is considered to be:	1 Serving =	Examples
Apple, banana, orange	1 medium size piece	 
Chopped, cooked, canned fruit	½ cup	
Fruit juice	½ cup	Juice from fruit, not artificially flavoured

Serving size One standard serving = 80 grams (translated into different units of cups depending on type of vegetable and standard cup measures available in the country).

Note: Tubers such as potatoes and cassava should not be included.

ANNEXURE V

Questionnaire for DCE(Discrete Choice Experiment) to elicit the preferences during the consumption of fruits and vegetables

“Suppose you are going to set a diet plan for yourself, giving more importance to fresh fruits and vegetables in your lunch/dinner. Imagine that your plan is for eight days. For each day, tell me which one would you choose. Two diet-plans are given for each day. You may choose one out of two plans for each day. Please give response for all the eight days.”

Day 1

A	B
 Will cost 50 Rupees	 Will cost 100 Rupees
 Will take it as juice	 Instead of juice, will take it as salad-cut pieces
 For lunch/dinner, will take juice only	 Will eat this with other foods for lunch/dinner
 Will add extra salt/sugar to the juice before eating	 Will not add extra salt/sugar before eating

Which one would you choose?

A

Or

B

Day 2

A	B
 Will cost 50 Rupees	 Will cost 100 Rupees
 Instead of juice, will take it as salad-cut pieces	 Will take it as juice
 For lunch/dinner, will take this only	 Will drink the juice with other foods for lunch/dinner
 Will not add extra salt/sugar before eating	 Will add extra salt/sugar to the juice before drinking

Which one would you choose?

A

Or

B

Day 3

A	B
 Will cost 100 Rupees	 Will cost 50 Rupees
 Will take it as juice	 Instead of juice, will take it as salad-cut pieces
 For lunch/dinner, will take juice only	 Will eat this with other foods for lunch/dinner
 Will not add extra salt/sugar to the juice before drinking	 Will add extra salt/sugar before eating

Which one would you choose?

A

Or

B

Day 4

A	B
 Will cost 50 Rupees	 Will cost 100 Rupees
 Instead of juice, will take it as salad-cut pieces	 Will take it as juice
 Will eat this with other foods for lunch/dinner	 For lunch/dinner, will take juice only
 Will not add extra salt/sugar before eating	 Will add extra salt/sugar before drinking

Which one would you choose?

A

Or

B

Day 5

A	B
 Will cost 100 Rupees	 Will cost 50 Rupees
 Will take it as juice	 Instead of juice, will take it as salad-cut pieces
 Will drink this with other foods for lunch/dinner	 For lunch/dinner, will eat this only
 Will add extra salt/sugar before drinking	 Will not add extra salt/sugar before eating

Which one would you choose?

A

Or

B

Day 6

A	B
 Will cost 50 Rupees	 Will cost 100 Rupees
 Will take it as juice	 Instead of juice, will take it as salad-cut pieces
 For lunch/dinner, will take juice only	 Will eat this with other foods for lunch/dinner
 Will not add extra salt/sugar before drinking	 Will add extra salt/sugar before eating

Which one would you choose?

A

Or

B

Day 7

A	B
 Will cost 100 Rupees	 Will cost 50 Rupees
 Instead of juice, will take it as salad-cut pieces	 Will take it as juice
 For lunch/dinner, will eat this only	 Will drink this with other foods for lunch/dinner
 Will not add extra salt/sugar before eating	 Will add extra salt/sugar before drinking

Which one would you choose?

A

Or

B

Day 8

A	B
 Will cost 100 Rupees	 Will cost 50 Rupees
 Instead of juice, will take it as salad-cut pieces	 Will take it as juice
 For lunch/dinner, will eat this only	 Will drink this with other foods for lunch/dinner
 Will add extra salt/sugar before eating	 Will not add extra salt/sugar before drinking

Which one would you choose?

A

Or

B

ANNEXURE VI

തിരുവനന്തപുരം നഗരത്തിൽ താമസിക്കുന്ന, 18-30 വയസ്സ് വരെ പ്രായമുള്ള യുവജനങ്ങളുടെ ഭക്ഷണ രീതി പഠിക്കുന്നതിനു വേണ്ടിയുള്ള സർവ്വേ

വിവരണ പത്രിക

(സർവ്വേയിൽ പങ്കെടുക്കുന്നവർക്കായുള്ള വിവരണ പത്രിക)

സർ /മാഡം ,

നമസ്കാരം , ഞാൻ സാഹസ്യ കെ .എൻ . തിരുവനന്തപുരം ശ്രീ ചിത്തിര തിരുനാൾ മെഡിക്കൽ ഇൻസ്റ്റിറ്റ്യൂട്ടിലെ ശാസ്ത്ര ആരോഗ്യ വിദ്യാഭ്യാസ ഗവേഷണ കേന്ദ്രമായ അച്യുതമേനോൻ സെന്ററിൽ പൊതുജന ആരോഗ്യം എന്ന വിഷയത്തിൽ ബിരുദാനന്തര ബിരുദത്തിനു (മാസ്റ്റേഴ്സ് ഓഫ് പബ്ലിക് ഹെൽത്ത്) പഠിക്കുന്നു. തിരുവനന്തപുരം നഗരത്തിൽ താമസിക്കുന്ന, 18-30 വയസ്സ് വരെ പ്രായമുള്ള യുവജനങ്ങളുടെ ഭക്ഷണ രീതിയെ സംബന്ധിച്ച ഈ പഠനം, ബിരുദാനന്തര ബിരുദ പഠനത്തിന്റെ ഭാഗമായിട്ടാണ് നടത്തുന്നത്. ഈ വിവരണ പത്രത്തിൽ നിങ്ങൾക്ക് മനസ്സിലാകാത്ത വാക്കുകൾ അടങ്ങിയിരിക്കാം . ഏതെങ്കിലും വാക്കുകളോ വിവരങ്ങളോ നിങ്ങൾക്ക് വ്യക്തമായി മനസ്സിലായില്ല എങ്കിൽ ദയവായി എന്നോട് ചോദിക്കുക.

പഠനത്തിന്റെ ഉദ്ദേശ്യം

കേരളത്തിൽ വർദ്ധിച്ചു വരുന്ന ജീവിത ശൈലി രോഗങ്ങൾ വലിയ ആശങ്കയാണ് ഉയർത്തുന്നത്. അനാരോഗ്യകരമായ ഭക്ഷണം ഇത്തരം രോഗങ്ങളുടെ മുഖ്യ കാരണങ്ങളിലൊന്നായി കണ്ടെത്തിയിട്ടുണ്ട് ഇതിനൊരു പ്രതിവിധി എന്നോണം നിത്യേന, ഫ്രഷ് ആയിട്ടുള്ള പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും കഴിക്കണമെന്ന് ലോകാരോഗ്യ സംഘടന നിർദ്ദേശിച്ചിട്ടുള്ളതാണ്. എന്നാൽ കേരളത്തിൽ ഇത് സംബന്ധിച്ചു നടത്തിയിട്ടുള്ള പഠനങ്ങൾ കാണിക്കുന്നത് പഴ വർഗ്ഗങ്ങളുടെയും പച്ചക്കറികളുടെയും ഉപയോഗം നിർദ്ദേശിച്ചിരിക്കുന്ന അളവിലും വളരെ കുറവാണ് എന്നാണ്. നഗരത്തിൽ താമസിക്കുന്ന യുവാക്കളുടെ ഭക്ഷണ ശീലങ്ങൾ പല കാരണങ്ങൾ കൊണ്ട്, ഇതിലും കൂടുതൽ അനാരോഗ്യകരമായിരിക്കുവാൻ സാധ്യത ഏറെയാണ്. ഈ പഠനത്തിന്റെ ഒരു ഉദ്ദേശ്യം തിരുവനന്തപുരം നഗരത്തിലെ യുവാക്കൾ പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും എത്രത്തോളം കഴിക്കുന്നുണ്ട് എന്ന് അറിയുക എന്നതാണ്. മറ്റൊരു ഉദ്ദേശ്യം ഇത്തരം ഭക്ഷണങ്ങൾ കഴിക്കുന്നതിൽ, എന്തെല്ലാം കാര്യങ്ങളുടെ സ്വാധീനമുണ്ട് എന്ന് ഒരു പരീക്ഷണാത്മക പഠന സഹായി (Experimental Tool) ഉപയോഗിച്ച് കണ്ടെത്തുക എന്നതാണ്.

പഠന പ്രവർത്തനങ്ങൾ

സർവ്വേയിൽ പങ്കെടുക്കുവാൻ താങ്കളുടെ വിലയേറിയ സമയത്തിന്റെ ഏകദേശം 20-30 മിനുട്ട് വേണ്ടി വന്നേക്കാം . താങ്കളോട് സ്വകാര്യമായിട്ടായിരിക്കും ചോദ്യങ്ങൾ ചോദിക്കുക. താങ്കളുടെ ചില വ്യക്തിപരമായ വിവരങ്ങൾ (പ്രായം, വൈവാഹിക നില, വിദ്യാഭ്യാസം, ജോലി തുടങ്ങിയവ), ഭക്ഷണത്തെ സംബന്ധിച്ച കാര്യങ്ങൾ (പ്രത്യേകിച്ച് പഴവർഗ്ഗങ്ങളുടെയും പച്ചക്കറികളുടെയും ഉപയോഗം) എന്നിവയെക്കുറിച്ചായിരിക്കും ചോദ്യങ്ങൾ. യാതൊരു തരത്തിലുള്ള ദേഹ പരിശോധനകളോ ലാബ് ടെസ്റ്റുകളോ നടത്തുന്നതായിരിക്കുകയില്ല.

താങ്കളെ എന്തിനാണ് ക്ഷണിക്കുന്നത്?

ഈ സർവ്വേയ്ക്കായി നിശ്ചയിച്ചിരിക്കുന്ന ഉൾപ്പെടുത്തൽ മാനദണ്ഡങ്ങൾക്ക് താങ്കൾ അനുയോജ്യൻ /അനുയോജ്യ ആണ്. ആയതിനാൽ ഈ പഠനത്തിലേക്ക് താങ്കളെ ക്ഷണിക്കുന്നു. ഒരു ലോട്ടറി മാർഗ്ഗത്തലൂടെയാണ് താങ്കളുടെ വാർഡ് തിരഞ്ഞെടുത്തത്.

സന്നദ്ധ പങ്കാളിത്തം

ഈ പഠനത്തിലുള്ള നിങ്ങളുടെ പങ്കാളിത്തം പൂർണ്ണമായും നിങ്ങളുടെ സമ്മത പ്രകാരം ആയിരിക്കും. പഠനം തുടങ്ങുന്നതിനു മുൻപോ തുടങ്ങിയതിനു ശേഷമോ എപ്പോൾ വേണമെങ്കിലും നിങ്ങൾക്കിതിൽ നിന്ന് പിന്മാറാവുന്നതാണ്. അങ്ങനെ പിന്മാറുന്നത് യാതൊരു തരത്തിലും നിങ്ങളെ ബാധിക്കുകയില്ല.

ഈ പഠനത്തിൽ പങ്കെടുത്താൽ താങ്കൾക്ക് എന്തെല്ലാം ദോഷങ്ങൾ ഉണ്ടാകാം ?

പഠനത്തിൽ പങ്കെടുക്കുമ്പോൾ ഉണ്ടാവുന്ന സമയ നഷ്ടം ഒഴികെ മറ്റൊരു തരത്തിലുള്ള ദോഷവും താങ്കൾക്കുണ്ടാവുകയില്ല.

ഈ പഠനത്തിൽ പങ്കെടുത്താൽ താങ്കൾക്ക് എന്തെല്ലാം ഗുണങ്ങൾ ഉണ്ടാകാം ?

ഈ പഠനത്തിൽ പങ്കെടുക്കുന്നത് വഴി താങ്കൾക്ക് നേരിട്ടോ /പ്രത്യക്ഷത്തിലോ ഗുണങ്ങൾ ഉണ്ടാകാൻ സാധ്യത ഇല്ല . എന്നാൽ ഇതിൽ നിന്നുള്ള കണ്ടെത്തലുകൾ, ഭാവിയിൽ ആരോഗ്യകരമായ ഭക്ഷണ ശീലം പ്രോത്സാഹിപ്പിക്കുന്നതിന് വേണ്ടിയുള്ള പോളിസിക്ൾക്കോ /പദ്ധതികൾക്കോ /തുടർ പഠനങ്ങൾക്കോ സഹായകരമാകുന്നതാണ് .

സാമ്പത്തിക നേട്ടവും ചിലവും

ഈ പഠനത്തിൽ പങ്കെടുക്കുമ്പോൾ നിങ്ങൾക്ക് സാമ്പത്തിക ചിലവൊന്നും ഉണ്ടാകുകയില്ല. ഈ പഠനത്തിലെ പങ്കാളിത്തത്തിനു താങ്കൾക്ക് പ്രതിഫലവും ലഭിക്കുകയില്ല.

രഹസ്യാത്മകത

താങ്കളുമായുള്ള അഭിമുഖം സ്വകാര്യമായിട്ടായിരിക്കും നടത്തുക. എല്ലാ വിവരങ്ങളും രഹസ്യമായി സൂക്ഷിക്കും . ഒരു ഘട്ടത്തിലും നിങ്ങളുടെ ഐഡന്റിറ്റി വെളിപ്പെടുത്തുകയില്ല. ശേഖരിച്ച വിവരങ്ങളുടെ രഹസ്യാത്മകത നിലനിർത്താൻ സഹായിക്കുന്ന ഒരു ഐഡന്റിഫിക്കേഷൻ നമ്പർ എല്ലാവർക്കും നൽകും . ഡാറ്റ വിശകലനം ചെയ്യുന്നവർക്ക് വേണ്ടി മാത്രമായി ഈ നമ്പറിന്റെ ഉപയോഗം പരിമിതപ്പെടുത്തും . പഠന സമയത്തും അതിനു ശേഷവും പങ്കെടുക്കുന്നയാളുടെ വിവരങ്ങൾ സംരക്ഷിക്കപ്പെടും. വിവര ശേഖരണ തീയതി മുതൽ മൂന്നു വർഷത്തേക്ക് പഠന വിവരങ്ങൾ സൂക്ഷിക്കുന്നതായിരിക്കും.

ഗവേഷണ പഠന ഫലങ്ങൾ

എം .പി .എച്ച് കോഴ്സിന്റെ ആവശ്യകതകൾ നിറവേറ്റുന്നതിനായി അന്തിമ തീസിസ് ആയി സമർപ്പിക്കും. തീസിസ് പ്രബന്ധം DSpace@sctimst യിൽ പ്രസിദ്ധീകരിക്കും. കണ്ടെത്തലുകൾ ഒരു പേപ്പറായി പ്രസിദ്ധീകരിക്കുകയോ ശാസ്ത്ര സംബന്ധമായ കോൺഫറൻസുകളിൽ അവതരിപ്പിക്കുകയോ ചെയ്യേക്കാം.

കൂടുതൽ വിവരങ്ങൾക്ക് ബന്ധപ്പെടാനുള്ള വിവരങ്ങൾ

താങ്കൾക്ക് പഠനവുമായി ബന്ധപ്പെട്ട് എന്തെങ്കിലും സംശയമുണ്ടെങ്കിൽ എന്നെ താഴെ പറയുന്ന വിലാസത്തിൽ ബന്ധപ്പെടാവുന്നതാണ്

അതു കൂടാതെ ധാർമ്മികതയുമായി ബന്ധപ്പെട്ട് എന്തെങ്കിലും സംശയങ്ങൾ ഉണ്ടെങ്കിലോ എന്റെ യോഗ്യതാ പത്രങ്ങൾ പരിശോധിക്കുവാൻ ആഗ്രഹിക്കുന്നുവെങ്കിലോ എന്നെയോ അല്ലെങ്കിൽ ഞങ്ങളുടെ സ്ഥാപനത്തിലെ എത്തിക്സ് കമ്മിറ്റി അംഗത്തിനെയോ ബന്ധപ്പെടാവുന്നതാണ് .

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ANNEXURE VII

സമ്മത പത്രം

(സർവ്വേയിൽ പങ്കെടുക്കുന്നവർക്ക് വേണ്ടി)

വിവരണ പത്രികയിൽ ഉള്ള എല്ലാ വിവരങ്ങളും ഞാൻ വായിച്ചു. പഠനത്തിന്റെ സ്വഭാവവും ഇടപെടലും എന്നോട് വിശദീകരിക്കുകയും ചെയ്തു. എന്റെ എല്ലാ ചോദ്യങ്ങൾക്കും തൃപ്തികരമായി ഉത്തരം ലഭിക്കുകയും ചെയ്തു. സമ്മത പത്രത്തിൽ ഒപ്പിടുന്നതിലൂടെ എന്നിൽ നിന്ന് എന്താണ് പ്രതീക്ഷിക്കുന്നുവെന്ന് ഞാൻ മനസ്സിലാക്കുന്നുവെന്നും ഈ പഠനത്തിൽ പങ്കെടുക്കുവാൻ ഞാൻ തയ്യാറാണെന്നും ഞാൻ സൂചിപ്പിക്കുന്നു. പഠനത്തിലെ പങ്കാളിത്തം സ്വമേധയാ ഉള്ളതാണെന്നും മുന്നറിയിപ്പ് നൽകാതെ എപ്പോൾ വേണമെങ്കിലും പിന്മാറാൻ സ്വാതന്ത്ര്യമുണ്ടെന്നും ഞാൻ മനസ്സിലാക്കുന്നു. മൂന്നാമതൊരു കക്ഷിക്ക് വിവരം കൈ മാറുമ്പോഴോ പ്രസിദ്ധീകരിക്കുമ്പോഴോ എന്റെ ഐഡന്റിറ്റി വെളിപ്പെടുത്തില്ലെന്ന് ഞാൻ മനസ്സിലാക്കുന്നു. ആവശ്യം വന്നാൽ ആരെയാണ് ബന്ധപ്പെടേണ്ടത് എന്ന് എന്നെ അറിയിച്ചിട്ടുണ്ട്. സൂക്ഷിക്കുന്നതിനു വേണ്ടി വിവരണ പത്രത്തിന്റെയും സമ്മത പത്രത്തിന്റെയും ഒരു പകർപ്പ് എനിക്ക് നൽകിയിട്ടുണ്ട്.

പങ്കെടുക്കുന്നയാളുടെ പേര്:

പങ്കെടുക്കുന്നയാളുടെ ഒപ്പ് / തള്ള വിരലടയാളം :

തീയതി

ഗവേഷകയുടെ പേര്:

ഗവേഷകയുടെ ഒപ്പ്:

തീയതി :

ANNEXURE VIII

തിരുവനന്തപുരം നഗരത്തിൽ താമസിക്കുന്ന, 18-30 വയസ്സ് വരെ പ്രായമുള്ള യുവജനങ്ങളുടെ ഭക്ഷണ രീതി പഠിക്കുന്നതിനു വേണ്ടിയുള്ള സർവ്വേ

ചോദ്യാവലി

ഐ . ഡി. നമ്പർ:

വാർഡ് നമ്പർ:

വീട്ടു നമ്പർ/ കെട്ടിട നമ്പർ:

തീയതി :

ഭാഗം 1- പ്രാഥമിക വിവരങ്ങൾ

ചോ . നം.	ചോദ്യം	പ്രതികരണം
1	നിങ്ങൾക്ക് എത്ര വയസ്സായി ? (പൂർത്തിയായ വർഷം)	
2	ലിംഗം	1. പുരുഷൻ 2. സ്ത്രീ 3. മറ്റുള്ളവ
3	നിങ്ങളുടെ വൈവാഹിക നില എന്താണ്?	1. വിവാഹം കഴിച്ചിട്ടില്ല 2. നിലവിൽ വിവാഹിതൻ /വിവാഹിത ആണ്/ഒരുമിച്ചു താമസിക്കുന്നു (നിയമപരമായി വിവാഹം കഴിച്ചിട്ടില്ല) 3. വേർപിരിഞ്ഞു കഴിയുന്നു/വിഭാര്യൻ /വിധവ
4	നിങ്ങൾക്ക് എത്ര വരെ വിദ്യാഭ്യാസം ലഭിച്ചിട്ടുണ്ട്?	1. ഔപചാരിക വിദ്യാഭ്യാസം ലഭിച്ചിട്ടില്ല 2. പ്രൈമറി തലം വരെ 3. ഹൈ സ്കൂൾ തലം വരെ 4. ഡിഗ്രി തലം വരെ 5. പിജി /അതിനു മുകളിൽ
5	നിങ്ങളുടെ നിലവിലെ ജോലി എന്താണ്?	1. പ്രൊഫഷണൽ 2. ക്ലാർക്ക് 3. കായികാധ്വാനം വേണ്ടുന്ന ജോലി 4. സ്വയം തൊഴിൽ 5. വീട്ടമ്മ 6. ജോലി ഇല്ല 7. വിദ്യാർത്ഥി /വിദ്യാർത്ഥിനി 8. മറ്റുള്ളവ (വ്യക്തമാക്കുക)

6	നിങ്ങളുടെ വീട്ടിലെ ശരാശരി മാസവരുമാനം എത്രയാണ്?	
7	നിങ്ങളുടെ വീട്ടിലെ റേഷൻ കാർഡ് ഏതാണ്?	1. അന്ത്യോദയ 2. ബി .പി .എൽ 3. എ .പി .എൽ 4. റേഷൻ കാർഡ് ഇല്ല
8	നിങ്ങൾ ഉൾപ്പെടെ നിങ്ങളുടെ വീട്ടിൽ എത്ര പേർ ഇപ്പോൾ താമസിക്കുന്നുണ്ട്?	

ഭാഗം 2 - ഭക്ഷണം

ഭാഗം 2.1 - പഴ വർഗ്ഗങ്ങൾ /പച്ചക്കറികൾ നിങ്ങൾ സാധാരണ കഴിക്കുന്ന പഴങ്ങൾ /പച്ചക്കറികൾ എന്നിവയെക്കുറിച്ചാണ് അടുത്ത നാലു ചോദ്യങ്ങൾ. ചില നാടൻ പഴങ്ങളുടെയും പച്ചക്കറികളുടെയും ചിത്രങ്ങൾ ഉൾപ്പെടുത്തിയിട്ടുള്ള ഒരു പോഷണ കാർഡ് എന്റെ പക്കൽ ഉണ്ട്. ഓരോ ചിത്രവും ഒരു പ്രാവശ്യം കഴിക്കുന്ന അളവിനെ സൂചിപ്പിക്കുന്നു. നിങ്ങൾ താഴെ കൊടുത്തിരിക്കുന്ന ചോദ്യങ്ങൾക്ക് ഉത്തരം നൽകുമ്പോൾ കഴിഞ്ഞ വർഷത്തെ ഒരു സാധാരണ ആഴ്ചയെക്കുറിച്ച് ചിന്തിക്കുക		
1	ഒരു സാധാരണ ആഴ്ചയിൽ എത്ര ദിവസം നിങ്ങൾ പഴ വർഗ്ഗങ്ങൾ കഴിക്കാറുണ്ട്? കാർഡ് കാണിക്കുക	ദിവസങ്ങളുടെ എണ്ണം അറിയില്ല 77
2	ആ ദിവസങ്ങളിൽ നിങ്ങൾ എത്ര പ്രാവശ്യം പഴ വർഗ്ഗങ്ങൾ കഴിക്കാറുണ്ട്? കാർഡ് കാണിക്കുക	തവണ കഴിക്കുന്നു അറിയില്ല 77
3	ഒരു സാധാരണ ആഴ്ചയിൽ എത്ര ദിവസം നിങ്ങൾ പച്ചക്കറികൾ കഴിക്കാറുണ്ട്? കാർഡ് കാണിക്കുക	ദിവസങ്ങളുടെ എണ്ണം അറിയില്ല 77
4	ആ ദിവസങ്ങളിൽ നിങ്ങൾ എത്ര പ്രാവശ്യം പച്ചക്കറികൾ കഴിക്കാറുണ്ട്? കാർഡ് കാണിക്കുക	തവണ കഴിക്കുന്നു അറിയില്ല 77
ഭാഗം 2.2 - ഉപ്പ് അടുത്ത മൂന്നു ചോദ്യങ്ങൾ നിങ്ങൾ ഭക്ഷണത്തിൽ ചേർക്കുന്ന ഉപ്പിനെക്കുറിച്ച് അറിയുവാനാണ്. സാധാരണ ഉപയോഗിക്കുന്ന ടേബിൾ സാൾട്ട്, സംസ്കരിച്ച ഉപ്പ് (കുടല്യപ്പ്, iodized ഉപ്പ്, ഉപ്പിന്റെ ക്യൂബ്, ലവണാംശം കൂടുതലുള്ള സോസ് (സോയ സോസ്) എന്നിവയെല്ലാം ഇവിടെ ഉപ്പ് എന്നതു കൊണ്ട് അർത്ഥമാക്കുന്നു (കാർഡ് കാണിക്കുക). നിങ്ങൾ ഭക്ഷണത്തിൽ അധികം ഉപ്പ് ഉപയോഗിക്കാത്ത ആളാണ് എന്ന് കരുതുന്നുവെങ്കിൽ പോലും ദയവായി താഴെ കൊടുത്തിരിക്കുന്ന ചോദ്യങ്ങൾക്ക് ഉത്തരം നൽകുക		

5	നിങ്ങൾ ഭക്ഷണം കഴിക്കുന്നതിനു തൊട്ടു മുൻപോ അല്ലെങ്കിൽ കഴിച്ചു കൊണ്ടിരിക്കുമ്പോഴോ , എപ്പോഴെല്ലാം ഉപ്പോ അല്ലെങ്കിൽ ഉപ്പു കൂടുതലുള്ള സോസോ (ഉദാ :സോയ സോസ്)ഭക്ഷണത്തിൽ ചേർക്കാറുണ്ട്?	1. എല്ലായ്പ്പോഴും 2. മിക്കവാറും 3. ഇടയ്ക്കൊക്കെ 4. വല്ലപ്പോഴും 5. ഒരിക്കലും ഇല്ല 77. അറിയില്ല
6	നിങ്ങളുടെ വീട്ടിൽ ഭക്ഷണം പാകം ചെയ്യുമ്പോഴോ /തയ്യാറാക്കുമ്പോഴോ എപ്പോഴെല്ലാം ഉപ്പു കൂടുതലുള്ള മസാലയോ സോസോ ഭക്ഷണത്തിൽ ചേർക്കാറുണ്ട്?	1. എല്ലായ്പ്പോഴും 2. മിക്കവാറും 3. ഇടയ്ക്കൊക്കെ 4. വല്ലപ്പോഴും 5. ഒരിക്കലും ഇല്ല 77. അറിയില്ല
7	എപ്പോഴെല്ലാം നിങ്ങൾ ഉപ്പു കൂടുതലുള്ള, സംസ്കരിച്ച ഭക്ഷണം കഴിക്കാറുണ്ട്? (ഉപ്പു കൂടുതലുള്ള സംസ്കരിച്ച ഭക്ഷണം എന്നത് കൊണ്ട് ഉദ്ദേശിച്ചത്, സ്വാഭാവിക അവസ്ഥയിൽ നിന്ന് മാറ്റം വരുത്തിയിട്ടുള്ള, പാക്കറ്റിൽ കിട്ടുന്ന ഉപ്പു അധികമുള്ള സ്റ്റാക്ക്സ്, അച്ചാർ , ഫാസ്റ്റ് ഫുഡ് റെസ്റ്റോറന്റിൽ നിന്ന് കിട്ടുന്ന ഉപ്പു അധികമുള്ള ഭക്ഷണം , ചീസ്, ബേക്കൺ , സംസ്കരിച്ച മാംസം എന്നിവയാണ്)	1. എല്ലായ്പ്പോഴും 2. മിക്കവാറും 3. ഇടയ്ക്കൊക്കെ 4. വല്ലപ്പോഴും 5. ഒരിക്കലും ഇല്ല 77. അറിയില്ല
ഭാഗം 2.3 - എണ്ണ /കൊഴുപ്പ്		
8	ഏതു തരത്തിലുള്ള എണ്ണ /അല്ലെങ്കിൽ കൊഴുപ്പാണ് നിങ്ങളുടെ വീട്ടിൽ ഭക്ഷണം പാകം ചെയ്യാനായി മിക്കവാറും ഉപയോഗിക്കാറുള്ളത്?	1. കടുകെണ്ണ 2. വെളിച്ചെണ്ണ 3. നല്ലെണ്ണ 4. സൺഫ്ലവർ ഓയിൽ 5. സോയാബീൻ ഓയിൽ 6. സഫോള ഓയിൽ 7. പാമോയിൽ 8. വനസ്പ്പതി 9. നെയ്യ് 10. വെണ്ണ 11.പ്രത്യേകിച്ച ഒരേണ്ണം പറയാൻ പറ്റില്ല 12. മറ്റുള്ളവ (വ്യക്തമാക്കുക)

ANNEXURE IX

Discrete Choice Experiment-നു വേണ്ടിയുള്ള ചോദ്യാവലി

പഴവർഗ്ഗങ്ങളും പച്ചക്കറികളും ദിവസേന കഴിക്കുന്നത് ആരോഗ്യത്തിന് വളരെ നല്ലതാണെന്ന് നിങ്ങൾക്ക് അറിയാമാരിക്കുമല്ലോ . ഉച്ച/ രാത്രി ഭക്ഷണത്തിൽ പഴവർഗ്ഗങ്ങൾക്കും പച്ചക്കറികൾക്കും വളരെ പ്രാധാന്യം കൊടുത്തുകൊണ്ടുള്ള, എട്ടു ദിവസത്തെ ഒരു പ്ലാൻ നിങ്ങൾ തയ്യാറാക്കുകയാണെന്ന് സങ്കൽപ്പിക്കുക. പഴവർഗ്ഗങ്ങളും പച്ചക്കറികളും എങ്ങനെയാണ് കഴിക്കുക എന്നതിന്റെ അടിസ്ഥാനത്തിൽ ഓരോ ദിവസത്തിനും രണ്ടു ചോയ്സ് വീതം നൽകിയിട്ടുണ്ട്. അതിൽ നിന്ന് ഒന്നു മാത്രം തെരഞ്ഞെടുക്കുക. ദയവായി എല്ലാ ദിവസത്തെയും സംബന്ധിച്ച ചോദ്യങ്ങൾക്ക് ഉത്തരം നൽകുക.

ഒന്നാമത്തെ ദിവസം

A	B
 50 രൂപ ചിലവാകും	 100 രൂപ ചിലവാകും
 ജ്യൂസ് ആയിട്ട് കഴിക്കും	 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കഷ്ടങ്ങളാക്കിയിട്ട് കഴിക്കും
 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക	 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?

A

അല്ലെങ്കിൽ

B

രണ്ടാമത്തെ ദിവസം

A	B
 50 രൂപ ചിലവാകും	 100 രൂപ ചിലവാകും
 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കഷ്ടങ്ങളാക്കിയിട്ട് കഴിക്കും	 ജ്യൂസ് ആയിട്ട് കഴിക്കും
 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക	 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?

A

അല്ലെങ്കിൽ

B

മുന്നാമത്തെ ദിവസം

A	B
 100 രൂപ ചിലവാകും	 50 രൂപ ചിലവാകും
 ജ്യൂസ് ആയിട്ട് കഴിക്കും	 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കഷ്ടങ്ങളാക്കിയിട്ട് കഴിക്കും
 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക	 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?
A അല്ലെങ്കിൽ B

നാലാമത്തെ ദിവസം

A	B
 50 രൂപ ചിലവാകും	 100 രൂപ ചിലവാകും
 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കണ്ണങ്ങളാക്കിയിട്ട് കഴിക്കും	 ജ്യൂസ് ആയിട്ട് കഴിക്കും
 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക	 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?

A

അല്ലെങ്കിൽ

B

അഞ്ചാമത്തെ ദിവസം

A	B
 100 രൂപ ചിലവാകും	 50 രൂപ ചിലവാകും
 ജ്യൂസ് ആയിട്ട് കഴിക്കും	 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കഷ്ടങ്ങളാക്കിയിട്ട് കഴിക്കും
 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക	 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?

A

അല്ലെങ്കിൽ

B

ആറാമത്തെ ദിവസം

A	B
 50 രൂപ ചിലവാകും	 100 രൂപ ചിലവാകും
 ജ്യൂസ് ആയിട്ട് കഴിക്കും	 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കഷ്ടപ്പെട്ട് കഴിക്കും
 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക	 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?

A

അല്ലെങ്കിൽ

B

ഏഴാമത്തെ ദിവസം

A	B
 100 രൂപ ചിലവാകും	 50 രൂപ ചിലവാകും
 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കഷ്ടങ്ങളാക്കിയിട്ട് കഴിക്കും	 ജ്യൂസ് ആയിട്ട് കഴിക്കും
 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക	 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?

A

അല്ലെങ്കിൽ

B

എട്ടാമത്തെ ദിവസം

A	B
 100 രൂപ ചിലവാകും	 50 രൂപ ചിലവാകും
 ജ്യൂസ് അല്ലാതെ സാലഡ് പോലെ കണ്ണങ്ങളാക്കിയിട്ട് കഴിക്കും	 ജ്യൂസ് ആയിട്ട് കഴിക്കും
 ഇത് മാത്രമായിട്ടാണ് കഴിക്കുക	 മറ്റു ഭക്ഷണത്തിന്റെ കൂടെയാണ് കഴിക്കുക
 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര/ ഉപ്പ് ചേർക്കും	 കഴിക്കുന്നതിനു മുന്നേ പഞ്ചസാര / ഉപ്പ് ചേർക്കില്ല

ഇവയിൽ ഏത് രീതിയാണ് നിങ്ങൾ തെരഞ്ഞെടുക്കുക ?

A

അല്ലെങ്കിൽ

B

ANNEXURE X

PARTICIPANT INFORMATION SHEET

In-depth Interview among Young Adult Individual (18-30 years)

Sir/ Madam, Namaskaram, I am Dr Sandra K.N, studying for Masters of Public Health (MPH) at Achutha Menon Centre for Health Sciences Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. I am planning to conduct a research titled '**Understanding fresh fruit & vegetable intake choices among young adults in Trivandrum City, Kerala: Development of a Discrete Choice Experiment**' as a part of the course requirement for postgraduate studies (Masters of Public Health). This consent form may contain terms and information that you do not understand. Please ask me if any words or information is not clearly understood by you.

Purpose of the study

There is a growing concern about the rise of lifestyle diseases in Kerala. Unhealthy diet is identified as one of the major risk factors for lifestyle diseases. WHO recommends regular intake of fresh fruits and vegetables to manage such diseases. Previous widescale studies in Kerala showed poor adherence to the recommended intake of fruits and vegetables. This may get worse among urban young adults due to multiple reasons. This study aims to assess fruit and vegetable consumption among young adults in Trivandrum city. Also, the factors influencing the consumption of these items will be studied by developing a new experimental tool for the same.

Procedure

This survey would take approximately 20-30 minutes of your valuable time. You will be asked questions in private. Questions will be related to your personal details and diet habits especially fruit and vegetable consumption. You won't be requested to undergo any kind of physical measurements or laboratory tests.

Why have you been invited?

You are invited for this study since you fulfill the inclusion criteria defined for this survey. Your ward was selected randomly by a lottery system.

Voluntary participation

Your participation in this study is entirely voluntary and you are also free to decide to withdraw permission to participate in this study at any time. If you do so, this will not affect you in any way.

What are the possible risks of participating in this study?

It is not anticipated that there are any risks to participation in this study except the time you spend for this.

What are the possible benefits of taking part in this study?

There are no direct benefits to you from the study. Once the study is over, the findings will be useful for developing experimental studies or policies that helps in boosting community level healthy eating interventions in future.

Cost and financial benefit

There will be no costs to you for participating in this study. And you will not be paid for your participation in this study.

Confidentiality

You will be interviewed in private. All information related to you will be kept confidential and at no stage, your identity will be revealed. A respondent identification number (RIN) will be assigned to each participant that will help in maintaining the confidentiality of the data collected. Access to this number will be restricted to those analysing the data only. Participant confidentiality will be safeguarded during and after the study. The study data will be stored for a period of 3 years from the date of data collection.

Results of the research study

The final thesis report will be submitted for the fulfilment of the requirements of the MPH degree. The thesis will be published in Dspace, SCTIMST. The findings may get published as a working paper and presented in scientific conferences and may be shared in appropriate scientific journals.

Contact information

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

Principal Investigator: Dr Sandra K N
MPH (2021-2023 Batch)
AMCHSS, SCTIMST, Trivandrum Thiruvananthapuram – 695011, Kerala, India Mobile:
+919048166350
Email: sandraknakshara@gmail.com

Signature of Principal Investigator:

Name of Supervisor: Dr. Manju Nair (Scientist 'D', SCTIMST, Trivandrum)

For any clarifications regarding the study's ethical clearance, you may contact the Member Secretary of the SCTIMST- IEC. The phone number is 0471-2524689 and the email id is iec.mem.sec@sctimst.ac.in

ANNEXURE XI

INFORMED CONSENT (In-depth interview)

I have read/been read out the information in the information sheet. The nature of the study and my involvement has been explained and all my questions have been answered satisfactorily. By signing the consent form, I indicate 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 disclosed. Further information will not be released to third parties or published. I have been informed who should be contacted if the need arises. I have been given a copy of the information sheet for my reference.

Participant's name:

Participant's signature/ thumb impression:

Date:

Interviewer's name:

Interviewer's signature:

Date:

ANNEXURE XII

In-depth interviews among study participants to explore the factors influencing their food choices and identify the attributes for Discrete Choice Experiment

INTERVIEW GUIDE

Base level information on food pattern

- What kind of food you prefer the most?
- Why you eat/prefer those items?

Knowledge on healthy eating

- What do you meant by 'healthy foods'? What are 'unhealthy' foods?
- Did you ever tried/ trying to stick on to 'healthy eating'? If yes, why? any difficulties faced while doing so? If no, why
- What is your opinion regarding fruit and vegetable intake?
- Why it is said that fruits and vegetables are important for health?

Choice/purchase of fruits and vegetables

- In what ways you incorporate fruits and vegetables in your diet? If not taking fruits and vegetables, why? Any other healthier alternatives?
- For you, how important is eating fresh fruits and vegetables regularly?
- When do you purchase/eat fruits and vegetables usually?
- From where you obtain fruits and vegetables?
- Name some fruits and vegetables you usually eat
- Why you pick particular items and why not pick other items?
- Any concerns in getting/ eating fruits and vegetables?
- What can you do to improve fruit and vegetable intake?
- What others can do to improve fruit and vegetable availability/intake? (government, shop keepers etc)

ANNEXURE XIII

തിരുവനന്തപുരം നഗരത്തിൽ താമസിക്കുന്ന, 18-30 വയസ്സ് വരെ പ്രായമുള്ള യുവജനങ്ങളുടെ ഭക്ഷണ രീതി പഠിക്കുന്നതിനു വേണ്ടിയുള്ള അഭിമുഖം

വിവരണ പത്രിക

(അഭിമുഖത്തിൽ പങ്കെടുക്കുന്നവർക്കായുള്ള വിവരണ പത്രിക)

സർ /മാഡം ,
നമസ്കാരം , ഞാൻ സാഹസ്യ കെ .എൻ . തിരുവനന്തപുരം ശ്രീ ചിത്തിര തിരുനാൾ മെഡിക്കൽ ഇൻസ്റ്റിറ്റ്യൂട്ടിലെ ശാസ്ത്ര ആരോഗ്യ വിദ്യാഭ്യാസ ഗവേഷണ കേന്ദ്രമായ അച്യുതമേനോൻ സെന്ററിൽ പൊതുജന ആരോഗ്യം എന്ന വിഷയത്തിൽ ബിരുദാനന്തര ബിരുദത്തിനു (മാസ്റ്റേഴ്സ് ഓഫ് പബ്ലിക് ഹെൽത്ത്) പഠിക്കുന്നു. തിരുവനന്തപുരം നഗരത്തിൽ താമസിക്കുന്ന, 18-30 വയസ്സ് വരെ പ്രായമുള്ള യുവജനങ്ങളുടെ ഭക്ഷണ രീതിയെ സംബന്ധിച്ച ഈ പഠനം, ബിരുദാനന്തര ബിരുദ പഠനത്തിന്റെ ഭാഗമായിട്ടാണ് നടത്തുന്നത്. ഈ വിവരണ പത്രത്തിൽ നിങ്ങൾക്ക് മനസ്സിലാക്കാത്ത വാക്കുകൾ അടങ്ങിയിരിക്കാം . ഏതെങ്കിലും വാക്കുകളോ വിവരങ്ങളോ നിങ്ങൾക്ക് വ്യക്തമായി മനസ്സിലായില്ല എങ്കിൽ ദയവായി എന്നോട് ചോദിക്കുക

പഠനത്തിന്റെ ഉദ്ദേശ്യം

കേരളത്തിൽ വർദ്ധിച്ചു വരുന്ന ജീവിത ശൈലി രോഗങ്ങൾ വലിയ ആശങ്കയാണ് ഉയർത്തുന്നത് . അനാരോഗ്യകരമായ ഭക്ഷണം ഇത്തരം രോഗങ്ങളുടെ മുഖ്യ കാരണങ്ങളിലൊന്നായി കണ്ടെത്തിയിട്ടുണ്ട് ഇതിനൊരു പ്രതിവിധി എന്നോണം നിത്യേന, ഫ്രഷ് ആയിട്ടുള്ള പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും കഴിക്കണമെന്ന് ലോകാരോഗ്യ സംഘടന നിർദ്ദേശിച്ചിട്ടുള്ളതാണ്. എന്നാൽ കേരളത്തിൽ ഇത് സംബന്ധിച്ചു നടത്തിയിട്ടുള്ള പഠനങ്ങൾ കാണിക്കുന്നത് പഴ വർഗ്ഗങ്ങളുടെയും പച്ചക്കറികളുടെയും ഉപയോഗം നിർദ്ദേശിച്ചിരിക്കുന്ന അളവിലും വളരെ കുറവാണ് എന്നാണ്. നഗരത്തിൽ താമസിക്കുന്ന യുവാക്കളുടെ ഭക്ഷണ ശീലങ്ങൾ പല കാരണങ്ങൾ കൊണ്ട്, ഇതിലും കൂടുതൽ അനാരോഗ്യകരമായിരിക്കുവാൻ സാധ്യത ഏറെയാണ്. ഈ പഠനത്തിന്റെ ഒരു ഉദ്ദേശ്യം തിരുവനന്തപുരം നഗരത്തിലെ യുവാക്കൾ പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും എത്രത്തോളം കഴിക്കുന്നുണ്ട് എന്ന് അറിയുക എന്നതാണ്. മറ്റൊരു ഉദ്ദേശ്യം ഇത്തരം ഭക്ഷണങ്ങൾ കഴിക്കുന്നതിൽ, എന്തെല്ലാം കാര്യങ്ങളുടെ സ്വാധീനമുണ്ട് എന്ന് ഒരു പരീക്ഷണാത്മക പഠന സഹായി (Experimental Tool) ഉപയോഗിച്ച് കണ്ടെത്തുക എന്നതാണ്.

പഠന പ്രവർത്തനങ്ങൾ

സർവ്വേയിൽ പങ്കെടുക്കുവാൻ താങ്കളുടെ വിലയേറിയ സമയത്തിന്റെ ഏകദേശം 20-30 മിനുട്ട് വേണ്ടി വന്നേക്കാം . താങ്കളോട് സ്വകാര്യമായിട്ടായിരിക്കും ചോദ്യങ്ങൾ ചോദിക്കുക. നിങ്ങളുടെ ചില വ്യക്തിപരമായ വിവരങ്ങൾ (പ്രായം, വൈവാഹിക നില, വിദ്യാഭ്യാസം, ജോലി തുടങ്ങിയവ), ഭക്ഷണത്തെ സംബന്ധിച്ച കാര്യങ്ങൾ (പ്രത്യേകിച്ച് പഴവർഗ്ഗങ്ങളുടെയും പച്ചക്കറികളുടെയും ഉപയോഗം) എന്നിവയെക്കുറിച്ചായിരിക്കും ചോദ്യങ്ങൾ. യാതൊരു തരത്തിലുള്ള ദേഹ പരിശോധനകളോ ലാബ് ടെസ്റ്റുകളോ നടത്തുന്നതായിരിക്കുകയില്ല.

താങ്കളെ എന്തിനാണ് ക്ഷണിക്കുന്നത്?

ഈ സർവ്വേയ്ക്കായി നിശ്ചയിച്ചിരിക്കുന്ന ഉൾപ്പെടുത്തൽ മാനദണ്ഡങ്ങൾക്ക് താങ്കൾ അനുയോജ്യൻ /അനുയോജ്യ ആണ്. ആയതിനാൽ ഈ പഠനത്തിലേക്ക് താങ്കളെ ക്ഷണിക്കുന്നു. ഒരു ലോട്ടറി മാർഗ്ഗത്തലൂടെയാണ് താങ്കളുടെ വാർഡ് തിരഞ്ഞെടുത്തത്.

സന്നദ്ധ പങ്കാളിത്തം

ഈ പഠനത്തിലുള്ള നിങ്ങളുടെ പങ്കാളിത്തം പൂർണ്ണമായും നിങ്ങളുടെ സമ്മത പ്രകാരം ആയിരിക്കും. പഠനം തുടങ്ങുന്നതിനു മുൻപോ തുടങ്ങിയതിനു ശേഷമോ എപ്പോൾ വേണമെങ്കിലും നിങ്ങൾക്കിതിൽ നിന്ന് പിന്മാറാവുന്നതാണ്. അങ്ങനെ പിന്മാറുന്നത് യാതൊരു തരത്തിലും നിങ്ങളെ ബാധിക്കുകയില്ല.

ഈ പഠനത്തിൽ പങ്കെടുത്താൽ താങ്കൾക്ക് എന്തെല്ലാം ദോഷങ്ങൾ ഉണ്ടാകാം ?

പഠനത്തിൽ പങ്കെടുക്കുമ്പോൾ ഉണ്ടാവുന്ന സമയ നഷ്ടം ഒഴികെ മറ്റൊരു തരത്തിലുള്ള ദോഷവും താങ്കൾക്കുണ്ടാവുകയില്ല.

ഈ പഠനത്തിൽ പങ്കെടുത്താൽ താങ്കൾക്ക് എന്തെല്ലാം ഗുണങ്ങൾ ഉണ്ടാകാം ?

ഈ പഠനത്തിൽ പങ്കെടുക്കുന്നത് വഴി താങ്കൾക്ക് നേരിട്ടോ / പ്രത്യക്ഷത്തിലോ ഗുണങ്ങൾ ഉണ്ടാകാൻ സാധ്യത ഇല്ല . എന്നാൽ ഇതിൽ നിന്നുള്ള കണ്ടെത്തലുകൾ, ഭാവിയിൽ ആരോഗ്യകരമായ ഭക്ഷണ ശീലം പ്രോത്സാഹിപ്പിക്കുന്നതിന് വേണ്ടിയുള്ള പോളിസിക്ൾക്കോ / പദ്ധതികൾക്കോ / തുടർ പഠനങ്ങൾക്കോ സഹായകരമാകുന്നതാണ് .

സാമ്പത്തിക നേട്ടവും ചിലവും

ഈ പഠനത്തിൽ പങ്കെടുക്കുമ്പോൾ നിങ്ങൾക്ക് സാമ്പത്തിക ചിലവൊന്നും ഉണ്ടാകുകയില്ല. ഈ പഠനത്തിലെ പങ്കാളിത്തത്തിനു താങ്കൾക്ക് പ്രതിഫലവും ലഭിക്കുകയില്ല.

രഹസ്യാത്മകത

താങ്കളുമായുള്ള അഭിമുഖം സ്വകാര്യമായിട്ടായിരിക്കും നടത്തുക. എല്ലാ വിവരങ്ങളും രഹസ്യമായി സൂക്ഷിക്കും . ഒരു ഘട്ടത്തിലും നിങ്ങളുടെ ഐഡന്റിറ്റി വെളിപ്പെടുത്തുകയില്ല. ശേഖരിച്ച വിവരങ്ങളുടെ രഹസ്യാത്മകത നിലനിർത്താൻ സഹായിക്കുന്ന ഒരു ഐഡന്റിഫിക്കേഷൻ നമ്പർ എല്ലാവർക്കും നൽകും . ഡാറ്റാ വിശകലനം ചെയ്യുന്നവർക്ക് വേണ്ടി മാത്രമായി ഈ നമ്പറിന്റെ ഉപയോഗം പരിമിതപ്പെടുത്തും . പഠന സമയത്തും അതിനു ശേഷവും പങ്കെടുക്കുന്നയാളുടെ വിവരങ്ങൾ സംരക്ഷിക്കപ്പെടും. വിവര ശേഖരണ തീയതി മുതൽ മൂന്നു വർഷത്തേക്ക് പഠന വിവരങ്ങൾ സൂക്ഷിക്കുന്നതായിരിക്കും.

ഗവേഷണ പഠന ഫലങ്ങൾ

എം . പി . എച്ച് കോഴ്സിന്റെ ആവശ്യകതകൾ നിറവേറ്റുന്നതിനായി അന്തിമ തീസിസ് ആയി സമർപ്പിക്കും. തീസിസ് പ്രബന്ധം DSpace@sctimst യിൽ പ്രസിദ്ധീകരിക്കും. കണ്ടെത്തലുകൾ ഒരു പേപ്പറായി പ്രസിദ്ധീകരിക്കുകയോ ശാസ്ത്ര സംബന്ധമായ കോൺഫറൻസുകളിൽ അവതരിപ്പിക്കുകയോ ചെയ്തേക്കാം.

കൂടുതൽ വിവരങ്ങൾക്ക് ബന്ധപ്പെടാനുള്ള വിവരങ്ങൾ

താങ്കൾക്ക് പഠനവുമായി ബന്ധപ്പെട്ട് എന്തെങ്കിലും സംശയമുണ്ടെങ്കിൽ എന്നെ താഴെ പറയുന്ന വിലാസത്തിൽ ബന്ധപ്പെടാവുന്നതാണ്

അതു കൂടാതെ ധാർമ്മികതയുമായി ബന്ധപ്പെട്ട് എന്തെങ്കിലും സംശയങ്ങൾ ഉണ്ടെങ്കിലോ എന്റെ യോഗ്യതാ പത്രങ്ങൾ പരിശോധിക്കുവാൻ ആഗ്രഹിക്കുന്നുവെങ്കിലോ എന്നെയോ അല്ലെങ്കിൽ ഞങ്ങളുടെ സ്ഥാപനത്തിലെ എത്തിക്സ് കമ്മിറ്റി അംഗത്തിനെയോ ബന്ധപ്പെടാവുന്നതാണ് .

ഡോ. സാന്ദ്ര കെ .എൻ
എം . പി . എച്ച് രണ്ടാം വർഷ വിദ്യാർത്ഥിനി
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സൂപ്പർവൈസർ : ഡോ. മഞ്ജു നായർ (സയന്റിസ്റ്റ് 'D', AMCHSS , SCTIMST, TRIVANDRUM)

എത്തിക്സ് കമ്മിറ്റി മെമ്പർ സെക്രട്ടറി
INSTITUTE ETHICS COMMITTEE (IEC), SCTIMST
TRIVANDRUM-695011

Ph: 0471-2524234
Email: iec.mem.sec@sctimst.ac.in



ANNEXURE XIV

സമ്മത പത്രം

(അഭിമുഖത്തിൽ പങ്കെടുക്കുന്നവർക്ക് വേണ്ടി)

വിവരണ പത്രികയിൽ ഉള്ള എല്ലാ വിവരങ്ങളും ഞാൻ വായിച്ചു. പഠനത്തിന്റെ സ്വഭാവവും ഇടപെടലും എന്നോട് വിശദീകരിക്കുകയും ചെയ്തു. എന്റെ എല്ലാ ചോദ്യങ്ങൾക്കും തൃപ്തികരമായി ഉത്തരം ലഭിക്കുകയും ചെയ്തു. സമ്മത പത്രത്തിൽ ഒപ്പിടുന്നതിലൂടെ എന്നിൽ നിന്ന് എന്താണ് പ്രതീക്ഷിക്കുന്നുവെന്ന് ഞാൻ മനസ്സിലാക്കുന്നുവെന്നും ഈ പഠനത്തിൽ പങ്കെടുക്കുവാൻ ഞാൻ തയ്യാറാണെന്നും ഞാൻ സൂചിപ്പിക്കുന്നു. പഠനത്തിലെ പങ്കാളിത്തം സ്വമേധയാ ഉള്ളതാണെന്നും മുന്നറിയിപ്പ് നൽകാതെ എപ്പോൾ വേണമെങ്കിലും പിന്മാറാൻ സ്വാതന്ത്ര്യമുണ്ടെന്നും ഞാൻ മനസ്സിലാക്കുന്നു. മൂന്നാമതൊരു കക്ഷിക്ക് വിവരം കൈ മാറുമ്പോഴോ പ്രസിദ്ധീകരിക്കുമ്പോഴോ എന്റെ ഐഡന്റിറ്റി വെളിപ്പെടുത്തില്ലെന്ന് ഞാൻ മനസ്സിലാക്കുന്നു. ആവശ്യം വന്നാൽ ആരെയാണ് ബന്ധപ്പെടേണ്ടത് എന്ന് എന്നെ അറിയിച്ചിട്ടുണ്ട്. സൂക്ഷിക്കുന്നതിനു വേണ്ടി വിവരണ പത്രത്തിന്റെയും സമ്മത പത്രത്തിന്റെയും ഒരു പകർപ്പ് എനിക്ക് നൽകിയിട്ടുണ്ട്.

പങ്കെടുക്കുന്നയാളുടെ പേര്:

പങ്കെടുക്കുന്നയാളുടെ ഒപ്പ് / തള്ള വിരലടയാളം :

തീയതി

ഗവേഷകയുടെ പേര്:

ഗവേഷകയുടെ ഒപ്പ്:

തീയതി :

ANNEXURE XV

തിരുവനന്തപുരം നഗരത്തിൽ താമസിക്കുന്ന, 18-30 വയസ്സ് വരെ പ്രായമുള്ള യുവജനങ്ങളുടെ ഭക്ഷണ രീതി പഠിക്കുന്നതിനു വേണ്ടിയുള്ള അഭിമുഖം

അഭിമുഖ സഹായി

ഭക്ഷണ രീതി അറിയുന്നതിനു വേണ്ടിയുള്ള പ്രാഥമിക വിവരങ്ങൾ

- ഏതു തരത്തിലുള്ള ഭക്ഷണം കഴിക്കുവാനാണ് നിങ്ങൾക്ക് കൂടുതൽ താല്പര്യം ?
- എന്തുകൊണ്ടാണ് നിങ്ങൾ അത്തരം ഭക്ഷണം ഇഷ്ടപ്പെടുന്നത്?

ആരോഗ്യകരമായ ഭക്ഷണ ശീലത്തെക്കുറിച്ചുള്ള അറിവ്

- “ആരോഗ്യകരമായ ഭക്ഷണം” എന്നതു കൊണ്ട് നിങ്ങൾ എന്താണ് അർത്ഥമാക്കുന്നത് ?
- എന്തൊക്കെയാണ് “അനാരോഗ്യകരമായ” ഭക്ഷണങ്ങൾ ?
- നിങ്ങൾ എപ്പോഴെങ്കിലും ആരോഗ്യകരമായ ഭക്ഷണ രീതി പിന്തുടർന്നിട്ടുണ്ടോ/പിന്തുടരുന്നുണ്ടോ ? ഉണ്ടെങ്കിൽ എന്തെല്ലാം കാരണങ്ങൾ കൊണ്ട് ? അങ്ങനെ ചെയ്തപ്പോൾ /ചെയ്യുമ്പോൾ എന്തെല്ലാം ബുദ്ധിമുട്ടുകൾ ഉണ്ടായിട്ടുണ്ട് /ഉണ്ടാകുന്നുണ്ട് ? ചെയ്തിട്ടില്ലെങ്കിൽ എന്ത് കൊണ്ട് ?
- പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും കഴിക്കുന്നതിനെക്കുറിച്ച് എന്താണ് അഭിപ്രായം ?
- പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും ആരോഗ്യത്തിന് നല്ലതാണെന്ന് പറയുന്നത് എന്ത് കൊണ്ടാണ് ?

പഴ വർഗ്ഗങ്ങളുടെയും പച്ചക്കറികളുടെയും തിരഞ്ഞെടുപ്പ്/വാങ്ങൽ

- ഏതെല്ലാം തരത്തിലാണ് നിങ്ങൾ പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും ഭക്ഷണത്തിൽ ഉൾപ്പെടുത്തുന്നത് ? അവ ഉൾപ്പെടുത്തുന്നില്ലെങ്കിൽ എന്തു കൊണ്ട് ? മറ്റേതെങ്കിലും തരത്തിലുള്ള ആഹാരമാണോ നിങ്ങൾക്കിഷ്ടം ?
- നിങ്ങളെ സംബന്ധിച്ച് പഴ വർഗ്ഗങ്ങളും പച്ചക്കറികളും നിത്യേന കഴിക്കുന്നത് എത്രത്തോളം പ്രധാനപ്പെട്ടതാണ് ?
- എപ്പോഴെല്ലാമാണ് നിങ്ങൾ പഴങ്ങളും പച്ചക്കറികളും വാങ്ങാറുള്ളത് /കഴിക്കാറുള്ളത് ?
- സാധാരണ എവിടെ നിന്നാണ് നിങ്ങൾ പഴങ്ങളും പച്ചക്കറികളും വാങ്ങാറുള്ളത്/നിങ്ങൾക്ക് കിട്ടാറുള്ളത് ?
- നിങ്ങൾക്കിഷ്ടപ്പെട്ട/ എപ്പോഴും കഴിക്കാറുള്ള പഴങ്ങളും പച്ചക്കറികളും ഏതെല്ലാമാണ് ?
- നിങ്ങൾ എന്ത് കൊണ്ടാണ് ചില തരം പഴങ്ങളും പച്ചക്കറികളും നിങ്ങൾ വാങ്ങുന്നതും /കഴിക്കുന്നതും ചിലത് വാങ്ങാത്തതും /കഴിക്കാത്തതും ?
- പഴങ്ങളും പച്ചക്കറികളും കിട്ടാനോ /കഴിക്കാനോ എന്തെങ്കിലും ബുദ്ധിമുട്ടോ /പ്രയാസമോ ഉണ്ടായിട്ടുണ്ടോ /ഉണ്ടാകുന്നുണ്ടോ ?
- പഴങ്ങളും പച്ചക്കറികളും കഴിക്കുന്നത് മെച്ചപ്പെടുത്താൻ നിങ്ങൾക്ക് എന്തൊക്കെ ചെയ്യാൻ കഴിയും ?
- മറ്റുള്ളവർക്ക് (സർക്കാർ , കച്ചവടക്കാർ) പഴങ്ങളുടെയും പച്ചക്കറികളുടെയും ലഭ്യത /കുടിപ്പ് മെച്ചപ്പെടുത്താൻ എന്തൊക്കെ ചെയ്യാൻ സാധിക്കും ?

ANNEXURE XVI



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)

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Institutional Ethics Committee

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

SCT/IEC/2009/MARCH/2023

18.04.2023

Dr. Sandra KN
MPH Student, AMCHSS
SCTIMST, Thiruvananthapuram

Dear Dr. Sandra,

The Institutional Ethics Committee held on 18th March, 2023, reviewed and discussed your application to conduct the study titled "UNDERSTANDING FRESH FRUIT AND VEGETABLE INTAKE CHOICES AMONG YOUNG ADULTS IN TRIVANDRUM CITY, KERALA: DEVELOPMENT OF A DISCRETE CHOICE EXPERIMENT (IEC/2009)".

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

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

The following documents were reviewed:

Original submission

1. Responses/Amendments made based on the Reviewer's comments
2. Checklist Form
3. Covering letter addressed to the Chairman, IEC, SCTIMST dated 03.03.2023
4. IEC Application Form
5. Research Proposal
6. Interview schedule for survey in English and Malayalam
7. Participant Information Sheet and Informed Consent Form in English and Malayalam
8. CV of Principal Investigator and Guide
9. Declaration Form
10. SRC Recommendation Letter

Revised submission

1. Covering letter addressed to the Chairman, IEC, SCTIMST dated 05.04.2023
2. Copy of IEC Recommendation letter dated 03.04.2023
3. Checklist Form
4. IEC Application Form
5. Research Proposal
6. Interview schedule for survey in English and Malayalam
7. Participant Information Sheet and Informed Consent Form in English and Malayalam
8. CV of Principal Investigator and Guide
9. Declaration Form
10. SRC Recommendation Letter

IEC Decision

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

Remarks:

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

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

Sincerely,



Dr. G. Srinivas
Member Secretary, IEC

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE (IEC)
SCTIMST, THIRUVANANTHAPURAM



ANNEXURE XVII

SIMILARITY REPORT

Document Information

Analyzed document	Sandra_thesis_plagiarismcheck.docx (D171968414)
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Sources included in the report

SA	Revised manuscript BMC-PH DAIVADANAM et al_24 April.docx Document Revised manuscript_BMC-PH_DAIVADANAM et al_24 April.docx (D14082832)	2
SA	sreeshma.docx Document sreeshma.docx (D35851611)	1

Entire Document

ABSTRACT

Introduction In the context of a growing burden of non-communicable diseases (NCDs), there is a significant focus on their prevention and control. The consumption of fresh fruits and vegetables is recognized as a protective behaviour that reduces the risk of NCDs. Studies from Kerala indicates that the intake of fresh fruits and vegetables among the adults is considerably lower than the recommended amounts. It is a known fact that the dietary behaviour and choices begin in early adulthood and therefore is an ideal period for healthy dietary behaviour interventions. The aim of this study is to understand the fresh fruits and vegetable intake among young adults in the age group 18-30 years living in Trivandrum city, Kerala and understand how young adults make preferences related to the consumption of fruits and vegetables. Methodology A cross-sectional survey was carried out among young adults aged 18-30 years (n = 280, mean age: 23.63(SD 3.53) years), to understand the fresh fruit and vegetable consumption among them. Since conventional methodologies are limited in scope to understand dietary choices, a Discrete Choice Experiment (DCE) was used to elicit the preferences and decision making of young adults related to consumption of fresh fruits and vegetables. Results The average daily intake of fresh fruits and vegetables in the study population (2.77 servings per day) was considerably lower than the recommended daily intake of five servings per day. The proportion of young adults who adhered to a recommended daily intake of fresh fruits and vegetables was 7.2 per cent. The DCE indicated a higher preference for consuming fruits and vegetables as a side dish/drink along with main meal (B = 0.376; p < 0.0001), and lower preference for costly items (B = -0.224; p < 0.0001). Discussion Intake of fresh fruits and vegetables among young adults and children are much below the recommended daily amounts. The findings of the DCE indicate that young adults had a higher preference for less costly fruits and vegetables and preferred to consume them as side dishes probably due to the existing food culture and cuisine. This study is one of the first to use DCE as a method to understand dietary choices among adults in India. Larger and more detailed DCEs may help to have a better understanding of dietary preferences among young adults and inform targeted interventions.

CHAPTER 1

INTRODUCTION AND REVIEW OF LITERATURE