
Methodology

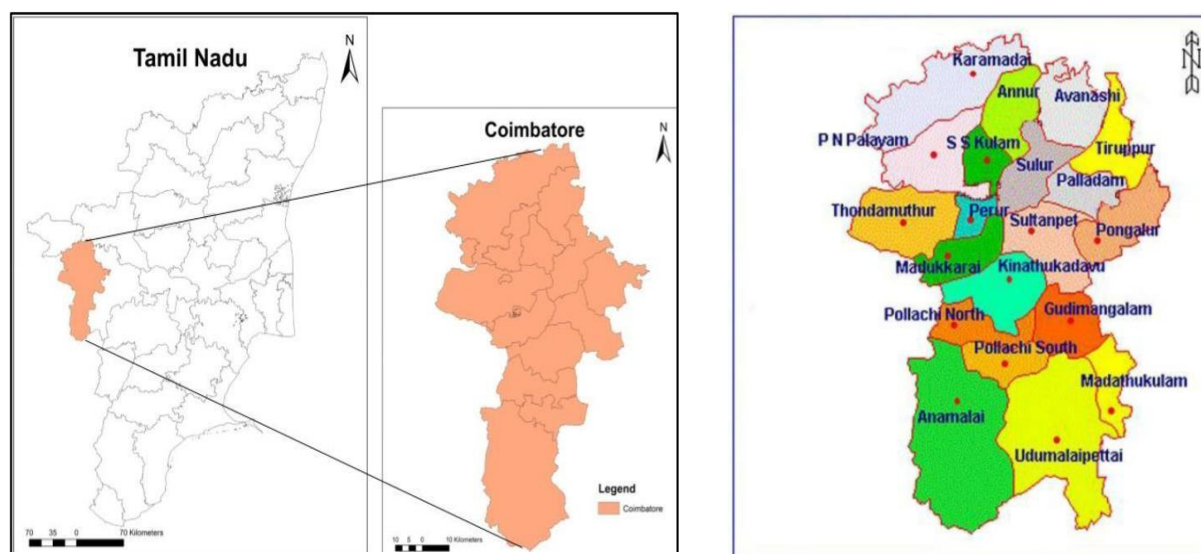
The methodology of the study titled “**Computation of nutritional footprint of food consumed by selected subjects and creating awareness on planetary health diet using the developed e application**” is discussed under the following phases,

- Phase I - Analyzing the knowledge, attitude, and practice about planetary health diet among selected subjects.
- Phase II - Calculation of carbon and nutritional footprint of the food consumed by selected subjects.
- Phase III - Development and evaluation of an e-application in promoting planetary health diet.
- Phase IV - Creating awareness on the importance of planetary health diet and analyzing the Post awareness – knowledge of planetary health diet among selected subjects.

3.1 Phase I – Analyzing the knowledge, attitude, and practice about planetary health diet among selected subjects.

Selection of Study Area

The rural and urban areas of Coimbatore district with easy commutes were selected for the study. The selected rural areas are Kinathukadavu, SS Kulam, Karamadai, Thondamuthur, Periyayanakanpalayam and Madikkarai and the urban areas selected are Saibaba colony, Ganapathy, Saravanampatti, Ukkadam, Ramnagar and Townhall.



Selection of sample

Middle aged adults within the age group of 30-50 years were selected using the purposive random sampling method and their willingness to participate in the study. The study tool consists of questions related to diet patterns, which were easy to collect. The sample size was calculated using the formula by Slovin, 1960.

$$n = \frac{N}{1+N.e^2}$$

Whereas n = Sample size,

N = Population size

e = Margin of error

Based on the formula, the determined sample size was 400.

Data collection

The selected subjects were provided with a comprehensive orientation that enhanced their understanding of the conduct of the study. In order to ensure clear comprehension, an informed consent form was developed in both English and the regional language, Tamil. This approach enabled the subjects to make an informed decision and express their voluntary

willingness to partake in the study, thereby highlighting their commitment to ethical practice and respect for individual autonomy.

The human ethical guidelines were followed according to the Declaration of Helsinki (2018). The study protocol was approved by the Institutional Human Ethical Committee of the Avinashilingam Institute for Home Science and Higher Education for Women (AUW/IHEC/FSMD-21-22/XPD-27), enclosed in Annexure I.

An interview schedule has been enclosed in Annexure II. Data regarding the demographic profile, socioeconomic status, food expenses, health status of the respondent and their family members, anthropometric details and diet pattern were collected. And also, food and nutrition related knowledge, sociocultural reasons on diet, psychopathology of planetary health diets, the availability of plant-based diets, knowledge of planetary health diets, attitude towards planetary health diet, health and wellness tool, eating behaviour, diet diversity and 24-hour recall were collected through interview schedule.

Demographic Profile

To ascertain the representativeness of subjects involved in a particular study, it becomes imperative to gather comprehensive demographic information about them for the purpose of generalizing to the broader target population. As such, various crucial details, including age, gender, address, email ID, religion, and mobile number, were collected within the demographic profile. By collecting this extensive dataset, researchers can better understand the diverse characteristics of their subjects, thereby enhancing the accuracy and validity of their findings when extending conclusions to the wider population under investigation.

Socio Economic Status

Numerous methods have been employed to measure socio economic position, but the most widely used methods are those that use factors such as education, social class, and income (Saleem *et al.*, 2019). The Modified Kuppuswamy Scale (2019) was used to gather monthly income data. Upper, Upper middle, Lower middle, Upper lower and lower class were the divisions used to describe socio economic class.

Data such as family income, occupation, and qualifications of the head of the family, type and size of the family and the personal information of each member were gathered to

analyse the socio-economic status. These indicators offer a thorough framework for evaluating the subject's socioeconomic position, facilitating the analysis and comprehension of the complex societal strata. Researchers can investigate the complex dynamics of socioeconomic disparities and their effects on both individuals and entire communities by using such measures.

Food Expenses

As emphasized by Gerbens *et al.*, (2010), food costs are a crucial element in the equation pertaining to consumption patterns. It is impossible to minimize the impact that excessive food costs have, particularly on those who are less in economic background, as it extends beyond simple financial difficulties. This burden has the potential to have serious effects on general nutritional well-being and health. Given the detrimental effects on vulnerable populations, it is crucial to acknowledge the seriousness of the situation and address the urgent problem of exorbitant food prices.

Per month cost of foods such as cereals and grains, pulses and legumes, fruits and vegetables, milk and milk products, meat and meat product, fats, oils and sugars, spices, and condiments, ready-to-eat and ready-to-cook foods, snacks, and fast food was measured and recorded.

Health Status of the Respondent and their family members

Clinical assessment plays a vital role in unravelling a myriad of crucial information, ranging from the prevailing illness trends and risk factors to the effectiveness of treatment interventions or even the measures to be undertaken to improve public health. Moreover, it helps to increase the functional abilities of individuals, caregiving patterns, and the associated financial burdens. As in the study by Thomas *et al.* (2017), the health problems of both the subjects and their family members are intricately examined, uncovering invaluable insights that steer healthcare providers towards precise and personalized care strategies.

The nature of the health problem such as skin (Petechial, Purpura, Pigmentation, Edema, Scaly rashes at sun exposed areas, Easy bruising, Dry, flaky skin and Yellow or orange discoloration), nails (Pallor or white colouring, Clubbing, Spoon shaped, Excessive dryness, Darkness in nails, Curved nail ends, Discoloured and thickened nails), Head/Hair (Dull/lack luster, Sparse, Alopecia, Depigmentation of hair, Scaly/flaky scalp, Easy pluck

ability, Swan neck deformity, Flag sign, Brittle hair), Eyes (Pallor conjunctiva, Night vision impairment, Photophobia, Xerophthalmia, Bitot's spots, Corneal ulceration, Diplopia, Nystagmus, Lateral gaze, Optic nerve atrophy, Retinitis pigmentosa, Visual deficits, KayserFleischer ring, Sunflower cataract, Xanthelasma).

Oral cavity (Glossitis, Gingivitis, Fissures/stomatitis, Cheilosis, Pale tongue, Atrophied papillae, Dental erosions, Dental caries, Dental fluorosis), Nervous system (Mental confusion, Depression, Lethargy, Weakness, Leg paralysis, Peripheral neuropath, Ataxia, Hyporeflexia, Muscle cramps, Fatigue), Neck (Goitre, Parotid enlargement), Heart (High output failure), Chest (Respiratory muscle weakness), Abdomen (Ascites, Hepatomegaly), Extremities (Edema, Atoxia, Bone tenderness, Bone/joint pain, Muscle pain, Hyporeflexia, Muscle wasting and weakness), Thorax muscles (Joint swelling, Thoracic rosary, Atrophic muscles, Decreased grip strength), General appearance (Loss of subcutaneous fat, Sunken or hollow cheeks) were checked.

Further, the duration and frequency of the diseases or disorders and medications, types of medications, and medical expenses were also collected.

Anthropometric Details

A variety of anthropometric characteristics are carefully observed and recorded in order to assess the individual's general health status. Height, Weight, Body mass index (BMI), Waist, circumference, hip circumference, and waist hip ratio (WHR) are some of these important metrics. When taken as a whole, these factors offer priceless information about an individual's vulnerability to several socially prevalent diseases, providing complex direction for required treatments and lifestyle changes. By assessing these anthropometric factors, researcher can establish a comprehensive understanding of an individual's health and well-being.

Diet Pattern

The influence of food choices on overall health cannot be emphasized. There is a lot of interest in diet patterns that specifically capture this relationship and have important consequences for a number of diseases. From vegetarian and non-vegetarian diets to Ova vegetarians, lacto vegetarian, lacto ova vegetarian and flexitarian diets – the list to explore and comprehend each food pattern is significant.

Food and nutrition related knowledge

It is impossible to overstate how important nutritional information is in determining one's eating choices. Understanding dietary guidelines and the origins of different nutrients enables people to make well-informed dietary choices. People can take control of their diet-related chronic illnesses and appreciate the importance of healthy meals with the help of this nutrition knowledge (Bradette *et al.*, 2017)

This section consists of nine challenging questions designed to probe deeply into the subjects, understanding in this important topic in order to assess their level of knowledge in the area of food and nutrition. Questions about nutrient-dense foods, healthful foods, the value of nutrients, and the significance of a balanced diet were asked to ascertain the understanding of the subject.

Sociocultural reasons for diet

The dietary choices are directly influenced by the overlapping facets of our social and economic identities, tastes, and cultural values. In this section, six specific questions were examined in order to gain a thorough grasp of the elements that influence people's food preferences. Examining the depths of their diet and elucidating their attitudes about adopting a plant-based lifestyle were the goal of these inquiries. It is possible to gain a better understanding of the complex interrelationship among, dietary practices, cultural influences and an individual's belief by examining them.

Psychopathology of the planetary health diet

Numerous studies have produced an abundance of evidence conclusively that demonstrates the complex relationship between the diet and mental health. Specifically, this crucial aspect of understanding individual's mental health is enhanced by this section consisting of nine different elements devoted to investigating the subject's perceptions and ideas about the invaluable advantages of following the revolutionary planetary health diet. By embracing the transformative potential of healthier eating habits, these studies can provide clearer understanding of the tremendous impact that dietary choices can have on mental health.

Availability of plant-based diet

In this section of the survey, subjects were given a set of five challenging questions designed to look at the issues related to the viability and accessibility of plant-based food

options in the variety of contacts including public areas, workplaces, and educational institutions, as well as their affordability, ease of purchase and convenience. By concentrating on these important aspects, the survey aimed to gain a comprehensive understanding of the opportunities and difficulties people have when integrating plant based dietary choices into their daily life.

Knowledge on Planetary Health Diet

An assessment of the subject's understanding of the planetary health diet was carried out in this section. The assessment consists of Seven questions, each of which tested the subject's knowledge on key ideas like biodiversity, local food sources, environmental factors, food sustainability, ecological and carbon footprints, greenhouse gas emissions, and the differences between green and blue water. The study also included questions about meat consumption and its determined effects on environmental health. These well-crafted questions are intended to assess the individual's awareness and understanding of these important planetary health issues.

Attitude towards Planetary Health diet

In this section, subjects have to provide their perspective on the wide range of important and thought – provoking aspects of sustainable diet practices. With regard to the urgent need to safeguard and preserve our planet a total of 11 extensive sets of questions probed deeply into their attitudes regarding the significant environmental effects associated with dietary choices, the challenges faced when trying to adopt more sustainable eating habits and their consumption patterns of both plants based and animal-based foods.

Health and wellness tool

With these of this evaluation tool, individuals can understand themselves and become more proactive in adopting good lifestyle practices and preventative care. This tool allows individuals to determine their degree of wellbeing by 10 well-constructed questions covering a range of topics including physical health, social relationships, emotional wellbeing, spiritual fulfilment and intellectual stimulation. This assessment which uses a convenient four-point rating system from rarely to always, provides insightful information and is a potent catalyst for personal development and flourishing.

Eating behaviour tool

This section is essential for understanding dietary intakes and encouraging the subject's healthy eating habits. Interestingly, it consists of a pre-determined series of 35 questions that are carefully crafted on the complex relationship between likelihood and consumption patterns. These questions are useful tool for carefully analysing and evaluating an individual's eating patterns, offering insightful data and aided in the development of strategies for promoting and encouraging better eating habits. Strongly agree, agree, neutral, disagree and strongly disagree were the five points on which this tool was scored.

Diet diversity

Dietary diversity is an important qualitative indicator of the food consumed by the households, reflecting their access to a variety of nutrient dense food and that an individual's diet is adequate. The food and agricultural organization (FAO) acknowledged in their 2018 report that the dietary diversity questionnaire has become a very effective, user friendly and economical evaluation instrument for evaluating this crucial component. Research and nutritionists can use this tool to fully assess the degree of dietary diversity, which is crucial for the best possible health and wellbeing in both individuals and communities.

A set of comprehensive closed ended questions was used to examine a wide range of 16 food groups in order to calculate the diet diversity score from the FAO 2018 report. Cereals, white roots, tubers, vitamin A-rich vegetables and tubers, dark leafy vegetables, other vegetables, vitamin-A rich fruits, organ meats, flesh meats, eggs, fish and sea foods, legumes, nuts and seeds, milk and milk products, oils and fats, sugars, spices, condiments, beverages, outside foods were all included in these food groups, which included and have a wide range of vital nutrients and dietary components.

By using the 24 hours diet recall approach, the food consumption patterns and sources of the subjects were analysed. In this specific section, comprehensive records of their food intake were collected, together with further data about the origin of food. By examining the consumption of these diverse food groups, a clearer picture emerges regarding the dietary habits and nutritional intake of individuals or populations under study (Plate-I).



PLATE I

SURVEY AMONG HOUSEHOLD WOMEN WITH IN THE AGE GROUP OF 30-50 YEARS IN COIMBATORE CITY

3.2 Phase II - Calculation of Carbon and Nutritional Footprint of food consumed by selected subjects.

This phase consists of two parts as

- Market Survey on the sourcing pattern of food ingredients
- Calculation of the carbon and nutritional footprint of food consumed by the selected subjects.

Market Survey on the sourcing pattern of food ingredients

A market survey (Annexure III) was conducted, aiming to gather crucial data pertaining to the procurement of food ingredients intended for sale. In particular, the sourcing patterns employed for both perishable and non-perishable food items were diligently scrutinized across three prominent distributors in the city of Coimbatore. The areas selected for perishable food ingredients are local markets in Ukkadam, Town hall and Saibaba colony near Ganga Hospital and the places selected for non - perishable food ingredients are retail supermarkets like Pazhamudir Nilayam, Reliance trends and Nilgiri's Groceries, as shown in Plate II.

In order to precisely determine the carbon footprint, a comprehensive interview schedule was carefully developed. Important personal details including name, age, sex, address, phone number are included in this schedule. It also includes comprehensive lists of foods that are perishable and non-perishable, along with the three sources from which they were sourced. Compiling this data is essential for accurate computation since it allows the calculations of emission factors to each food ingredient, the total yield of products and the distance travelled. A comprehensive and precise evaluation of the carbon footprint can be accomplished by the collected



PLATE II
COLLECTION OF DATA FROM LOCAL MARKETS AND RETAIL SUPER
MARKETS

Calculation of Carbon and Nutritional Footprint:

From the collected data, the carbon footprint and nutritional footprint of food consumed by selected subjects were calculated.

Carbon footprint

The concept of the 'Carbon Footprint' has gained immense traction and widespread acceptance across scientific and industrial spheres. This term encompasses the entirety of greenhouse gas emissions associated with a product's life cycle. The carbon footprint is a useful tool for evaluating environmental effects; it must be complemented by an all-encompassing input indicator to obtain a more comprehensive understanding. This indicator provides a more comprehensive examination by examining the movement of biotic and abiotic elements on a large scale, (Schmidt 2008).

Extensive research was done in the first phase of the study to collect and analyse crucial data about the sourcing of dietary ingredients.

This involved collecting data on various aspects, such as the locations from which these ingredients were obtained. Furthermore, leveraging this invaluable data, a comprehensive assessment was made to determine the distance between these sourcing points and the prominent retail outlets in the Coimbatore region. Additionally, secondary data pertaining to the transportation methods employed, irrigation techniques, including the types of fertilizers used, watering methodologies, harvesting approaches, the mode of vehicles utilized throughout the entire process, and the overall yield of food produced per acre was also documented.

One of the important factors in determining the carbon footprint was the transportation and irrigation emission factors that were computed using the data that was gathered. A thorough analysis of the overall emission was established by integrating the emission elements of irrigation, transportation, and each food ingredient. For a trustworthy assessment of the environmental impact of different dietary ingredients, these emission parameters were then included to the carbon footprint formula.

The carbon footprint of the food ingredients was calculated per year by using the formula,

$$\text{Carbon footprint} = \text{Consumption of items / day (kcal/day)} \times 365 \times \text{Emission factor} \\ (\text{kgCO}_2/\text{kcal})$$

Whereas here,

Consumption of items / day (kcal/day) – The energy in kcal of selected food items consumed by the subjects, the energy was calculated for each food items using IFCT nutritive value book (2017).

365 – Number of days in a year

Emission factor – Adjusted daily emission factor for a particular harvested area.

Nutritional footprint

The nutrient balance concept involves a thorough analysis and comparison of the disqualifying nutrients – which are generally recognized to be determined when ingested in excess – with the important nutrients, are qualifying nutrients which are critical for preserving optimum health. This novel strategy is based on the idea that achieving delicate equilibrium between these two categories of nutrients is essential which to life span and general wellbeing. Individuals can greatly improve their health and lower their chances of developing number of health issues by empathizing the consumption of qualifying nutrients while strictly monitoring and minimizing the absorption of disqualifying nutrients.

Qualifying Index (QI)

Understanding the vital nutrients for preserving optimum health is greatly advanced by 2017 study conducted by the ICMR – National Institute of Nutrition (NIN). The main qualifying nutrients identified in this study are widely accepted to be essential for general health. In addition to being acknowledged as essential, these are also extremely important for maintaining good health. This study represents significant breakthrough in the field of nutrition and health by measuring the complexity of these nutrients.

The qualifying index (QI) which represents the ratio of the amount of each key nutrients present in a 2000 calorie serving of a meal to the appropriate dietary reference

intake (DRI) value, has been used in the study to examine the nutritional content. The study primarily used the recommended dietary allowances (RDA) as the standard for dietary requirements, although the adequate intake (AI) was employed as backup standard in situations when the RDA was unavailable. These measurements made it feasible to analyse the nutritional value of the meal.

Disqualifying Index (DI)

The nutrients that have been associated with adverse health effects when consumption is excess in diet were included in this calculation. Similar to the qualifying index (QI), the disqualifying index (DI) was created using a ratio that contrasts the daily maximal reference values (MRV) for a given nutrients with the nutritional content of a 2000 kcal serving of a given meal. This computation is an important indicator that gives information on a food's degree of qualification according to its nutrient's composition. By identifying foods that exceed the, recommended MRVs, and DI helps everyone to make educated dietary choices and avoid potentially unhealthy choices.

Derivations of Qualifying and Disqualifying Indices

The qualifying (QI) and disqualifying (DI) indices are both important measures of nutritional value that offer a novel method of determining the nutrient composition of particular meals. These indices comprehensive overview of a nutritional value of the meal in reference to the dietary reference intake (DRI) for each nutrient and computed as the arithmetic means of nutrient proposition. In order to reflect the typical energy demands of the general population, the commonly acknowledged daily energy requirement of 2000 kcal/day was selected. Making informed nutritional choices is standardized value, which makes comparisons easier.

The individualized daily energy and nutritional requirements of children, adolescents, and adult males must be taken into account while assessing these age groups. By adopting these all – encompassing strategy, their bodies are given the ideal ratio of essential nutrients, promoting their development, growth, and general wellbeing. They can create and carryout nutritional plan and methods that suite their needs and improve health and vitality by understanding the differences in these physiological periods of life.

Mathematically, the Qualifying Index (QI) is given by,

$$QI = Ed/Ep \sum_{j=1}^{Nq} \frac{aq,j}{rq,j} / Nq$$

And the Disqualifying Index (DI) by,

$$DI = Ed/Ep \sum_{j=1}^{Nd} \frac{ad,j}{rd,j} / Nd$$

Where: Ed = daily energy needs of the population age group under consideration (kcal)

Ep = energy in the amount of the food or meal analysed (kcal)

aq,j = amount of qualifying nutrients in the food analysed (g)

ad,j = amounts of disqualifying nutrients in the same amount of the food (g or mg)

rq,j = DRI of qualifying nutrients (g, mg, or mcg/day)

rd,j = MRV of disqualifying nutrients (g or mg/day)

Nq = number of qualifying nutrients considered

Nd = number of disqualifying nutrients considered

The assessment of the nutritional content of a meal hinge on a key parameter, known as the Qualifying Index value. A meal is deemed abundant in nutrients if this value surpasses the threshold of 1.0. In fact, the extent to which the Qualifying Index value surpasses this benchmark directly correlates with the meal's nutrient density. Conversely, when the Qualifying Index value falls below 1.0, the meal is categorized as energy rich. Intriguingly, the lower the Qualifying Index value, the higher the concentration of energy within the meal, potentially making it a desirable choice for individuals seeking a quick burst of vitality.

When the Disqualifying Index value surpassed 1.0, it denoted that the meal had been affected by disqualifying nutrients, as their average quantity in relation to energy content went beyond the Maximal Reference Values (MRV). Consequently, scores below 1.0 on the

Disqualifying Index indicated that a particular food remained uncompromised in this regard. In a nutshell, this metric assists in determining whether certain foods meet the required nutrient standards or if they fall short, providing valuable insights into their nutritional composition.

Nutrient balance Score

The Nutrient Balance Score is an essential tool that evaluates the ability of a product, meal, or diet to fulfill the daily requirements of all qualifying nutrients within a 2000 kcal sample. If a meal successfully satisfies the recommended dietary intake for each qualifying nutrient, it attains a perfect Nutrient Balance score of 100%. However, a score of 0% indicates that the item falls short of meeting any of the essential criteria for qualifying nutrients. This score serves as a critical indicator of the nutritional value provided by a particular food or diet; ensuring individuals make informed choices for their overall well-being. The intermediate conditions have a linear connection, allowing for direct comparisons of particular items, meals, and diets.

Mathematically, Nutrient Balance score (expressed as a percentage) is represented by,

$$NB\% = \sum_{i=1}^{N_q} \frac{q_i}{1.0} \cdot 100$$

Where:

q_i, j = value for the Qualifying Index of an individual nutrient

N_q = number of qualifying nutrients considered.

The Nutrient Balance (NB) is determined by carefully measuring the Qualifying Index (q_i) of each qualifying nutrient, both with and without truncation. If a nutrient's Qualifying Index surpasses 1.0 ($q_i > 1.0$), it is adjusted downward to 1.0. However, any nutrient that maintains a value equal to or less than 1.0 ($q_i \leq 1.0$) remains unchanged. The reasoning behind implementing this criterion, which states that once a given qualifying nutrient reaches a value of 1.0, any further provision of that nutrient is deemed to have no additional nutritional benefit.

First and foremost, it was design to protect against mean reading for a meal that contained abnormally high concentrations of one or two particulars' nutrients. Secondly rather than only aiming for exaggerated nutritional value, it made sure that they emphasis on fulfilling the needs for a varied and balanced diet. A more and precise assessment content could be achieved by using this method.

Because it requires a different assessment from the base line qualifying index values, the nutrient balance (NB) differs from the qualifying (QI) or disqualifying index (DI). The NB addresses the intricate problem of nutritional complementarily that emerges when different diets and dietary components are combined, in contrast to the (QI) or (DI), which may be easily calculated by computing a weighted average for different meal combinations. Given the wide range of potential nutritional harmony, separate reassessment is necessary in order to determine the nutrient balance score.

3.3 Phase III - Development and Evaluation of an e-application in promoting planetary health diet

Development and Evaluation of an e-application in promoting planetary health diet

Four components were to be used in the design and development of e-application. The first section raised awareness of foods that promote planetary health. This section contains secondary source data on food consumption, food processing, greenhouse gas emissions and carbon footprints from food processing, and the unsustainable eating of excessive amount of meat. The EAT lancet commission, 2019 provided principles, guidelines, the advantages of the global health diet, and the solutions to rescue the planet were also included.

According to (IFCT) 2017 an e-application is made accurately determine the carbon footprint of frequently used food items by taking energy in kcal into account. This is accomplished by applying the proper emission factor to each item and taking into account the number of days in a year. Important information including water use, yield per acre, distance travel and irrigation, equipment's are also considered it in order to calculate this factor. The end result is a computation that makes to understand the possible environmental impacts of various food ingredients with greater accuracy.

An exact estimate of the user's nutritional intake is made when they enter the amount of food they consumed during the meal of the day, including the precise amount of raw

ingredients. To ascertain if the individual has surpassed or fallen short of the intended consumption, the actual intake is then compared with the recommended dietary allowances (RDA). Along in this study a predetermined algorithm is used to determine the qualifying index, disqualifying index, and nutrient balance score. This extensive computation guarantees complete assessments of the users eating patterns and offer a comprehensive review and ensuring of their nutritional condition.

Carbon footprint food exchange list is a crucial part of the development e-application, which helps people make educated food choices and lessen their environmental effect. Numerous nutrients, including energy, carbohydrates, protein, fat, fibre, vitamins, and minerals are taken into account in this list. Users may quickly identify food options that reduce their carbon footprint by referring this invaluable resource, which encourages sustainable activities while guaranteeing their dietary needs are satisfied. This all-inclusive strategy enables people to maintain good nutrition while taking concrete actions towards the greener future.

Creating screens with the resources collected for e-application development

The MS power point that was included in Annexure-V was used to generate the screens that displayed important details regarding the planetary health diet. This visually appealing screen address a number of themes related to the significant dietary concept, including vital subjects like food intake, food processing and the greenhouse gas emissions that result from it and the carbon footprint cost by such operations. Additionally, the sustainability that results from consuming too much meat was discussed. The planetary health diet and the crucial role that farmers, cities, health professionals and the global food transition as a common duty play were highlighted in these screens. A thorough research for successfully adopting the planetary health diet is provided, along with practical recommendations and estimated influence on mortality rates.

Evaluation of the Developed e- application and Willingness of the subjects to use an e-application

The developed e-application was shared to the dieticians, computer professionals and the public for evaluation. The developed e-application was evaluated in terms of content, usefulness, and time consumption. The interview schedule enclosed in Annexure IV was given to the subjects to evaluate the developed e-application. Their inputs were subsequently

incorporated to enhance an e-application's functionality and ensure its optimal performance for future endeavours (Plate III).



PLATE III
EVALUATION OF THE DEVELOPED E- APPLICATION

3.4 Phase IV Creating awareness on the importance of planetary health diet and analyzing the Post – knowledge of planetary health diet among selected adults

According to Thornton's research findings in 2012, it becomes evident that global food systems play a significant role in our environment by not only contributing to a staggering 20-35 percent of the Earth's greenhouse gas (GHG) emissions but also by occupying a substantial 40% of its ice-free land area. Furthermore, these systems are responsible for nutrient pollution in both terrestrial and aquatic ecosystems, thus disrupting their delicate balance. Alarming as it may be, it is crucial to recognize that the adverse effects of global food systems extend to biodiversity loss, making them the primary driver behind the decline in global tapestry of life forms.

Survey to analyze the knowledge of the subjects about the planetary health diet

The selected subjects within the age group of 30 to 50 years from urban and rural areas of Coimbatore district were specifically selected to participate in the awareness session. In phase I, a comprehensive survey was conducted before the awareness session on planetary health diet. The main objective of this survey was to examine the knowledge, attitude, and practices of selected subjects with relation to the idea of a planetary health diet. To gather the necessary data, developed interview schedule which was effective tool used to interview the subjects to analyse their pre-existing knowledge before the commencement of the awareness session.

Creating awareness on promoting planetary health diet

Through the developed e-application, awareness session was successfully delivered on the importance of planetary health diet. This interactive application not only presented users with comprehensive knowledge about the subject but also encouraged them to actively engage with the content. Subjects were encouraged to install the developed e-application for their future use in order to ensure their continuous access to this valuable resource. This awareness session aimed to enable subjects to make decisions that support their personal health and the well-being of the planet by educating and giving them practical advice.

Survey to analyze the willingness of the subjects to follow planetary health diet

After the awareness session, a survey was conducted among the selected subjects to access the impact of the implemented awareness program. This assessment approach aimed to

assess the interest of the subjects in embracing the planetary health diet as well as their level of knowledge gained. An analysis of the collected data was done in order to compare pre and post knowledge and comprehend the prevailing attitudes and practices related to this dietary strategy (Plate IV).

Analyses of data

The collected data were classified and edited to enhance its quality for coding purposes to data analysis process. The tabulation was done in order to arrange the data in a systematic way. After tabulation, statistical methods including ANOVA, t-test, correlation, chi square tests and regression analysis were used to analyse the coded data by using SPSS software. The outcome of these analyses was discussed and interpreted in the Results and discussion.



PLATE IV

CREATING AWARENESS ON PROMOTING PLANETARY HEALTH DIET

RESEARCH DESIGN

Computation of nutritional footprint of food consumed by selected subjects and creating awareness on planetary health diet using the developed e- application

