SPECIMEN FORMAT FOR THESES OF MONTH

Faculty	**:**	Home Science
Department	**:**	Food Service Management and Dietetics
Branch/ Area:	**:**	Planetary Health Diet
Sub Subject Heading:	**:**	-
Candidate's Name	**:**	Komathy.N
Candidate's Address with email	**:**	Department of Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore-641043. 20phfdf001@avinuty.ac.in
Title of the thesis	**:**	Computation of Nutritional Footprint of Food Consumed by Selected Subjects and Creating Awareness on Planetary Health Diet using the Developed e-Application
(i) In Roman Script (ii) In roman Script		- -
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Name of Supervisor	**:**	Dr.R.Radha
Designation of Supervisor	**:**	Associate Professor
Centre/department/school in which research was conducted	**:**	Food Service Management and Dietetics, School of Home Science
University's Name & Address	**:**	Avinashilingam Institute for Home Science and Higher Education for Women, Bharathi Park Road, Saibaba Colony, Coimbatore-641043.

Abstract within 300 words:

The Planetary Health Diet, proposed by the EAT-Lancet Commission, seeks to balance human health with environmental sustainability by providing evidence-based guidelines for nutritious and eco-friendly food consumption. This study was conducted with the primary objective of promoting a sustainable food ecosystem through the adoption of the planetary health diet. Secondary objectives included assessing knowledge, attitudes, and practices related to the diet among selected subjects, calculating the carbon and nutritional footprints of their food choices, developing and evaluating an e-application to promote dietary awareness, and measuring pre and post knowledge levels following an intervention. A total of 400 women aged 30–50 years were recruited using purposive random sampling. Surveys were administered to evaluate baseline and post-intervention knowledge, attitudes, and practices, as well as to assess the environmental impact of their dietary intake. An e-application was also created to support awareness and adoption of the planetary health diet. The findings revealed a statistically significant negative relationship between subject's knowledge and their adherence to the diet, indicating that awareness alone does not necessarily translate into behavioral change. Factors such as accessibility, cultural preferences, and ingrained habits may act as barriers to adoption. Analysis of the carbon footprint showed that participants in the 30–35 age group had the highest footprint, whereas those in the 46–50 age group had the lowest, followed by the 41–45 group. However, no significant differences were observed in dietary implementation before and after the awareness program, suggesting limited translation of knowledge into practice. Overall, the study underscores the complexity of dietary behavior change, highlighting that while participants recognized the importance of the planetary health diet, they struggled with its practical application. The findings emphasize the need for multifaceted strategies beyond knowledge dissemination to effectively promote sustainable and health-conscious dietary practices.

i) Major objectives :

- To analyze the knowledge, attitude, and practice of Planetary health diet among selected subjects
- To calculate carbon and nutritional Footprint of the food consumed by selected subjects.
- To develop and evaluate an e-application in promoting planetary health diet.

- To create awareness on the importance of planetary health diet and analyze the Post – knowledge about planetary health diet among selected subjects.

ii) Hypothesis:

The following Hypotheses were tested:

Null hypothesis:

1. There is no relationship between the knowledge of the subjects and the practice of planetary health diet.

2. There is no difference between pre and post knowledge, attitude, and practice of planetary health diet among subjects.

Alternate hypothesis:

1. There is a relationship between the knowledge of the subjects and the practice of planetary health diet.

2. There is a difference between pre and post knowledge, attitude, and practice of planetary health diet among subjects

iii) Methodology :

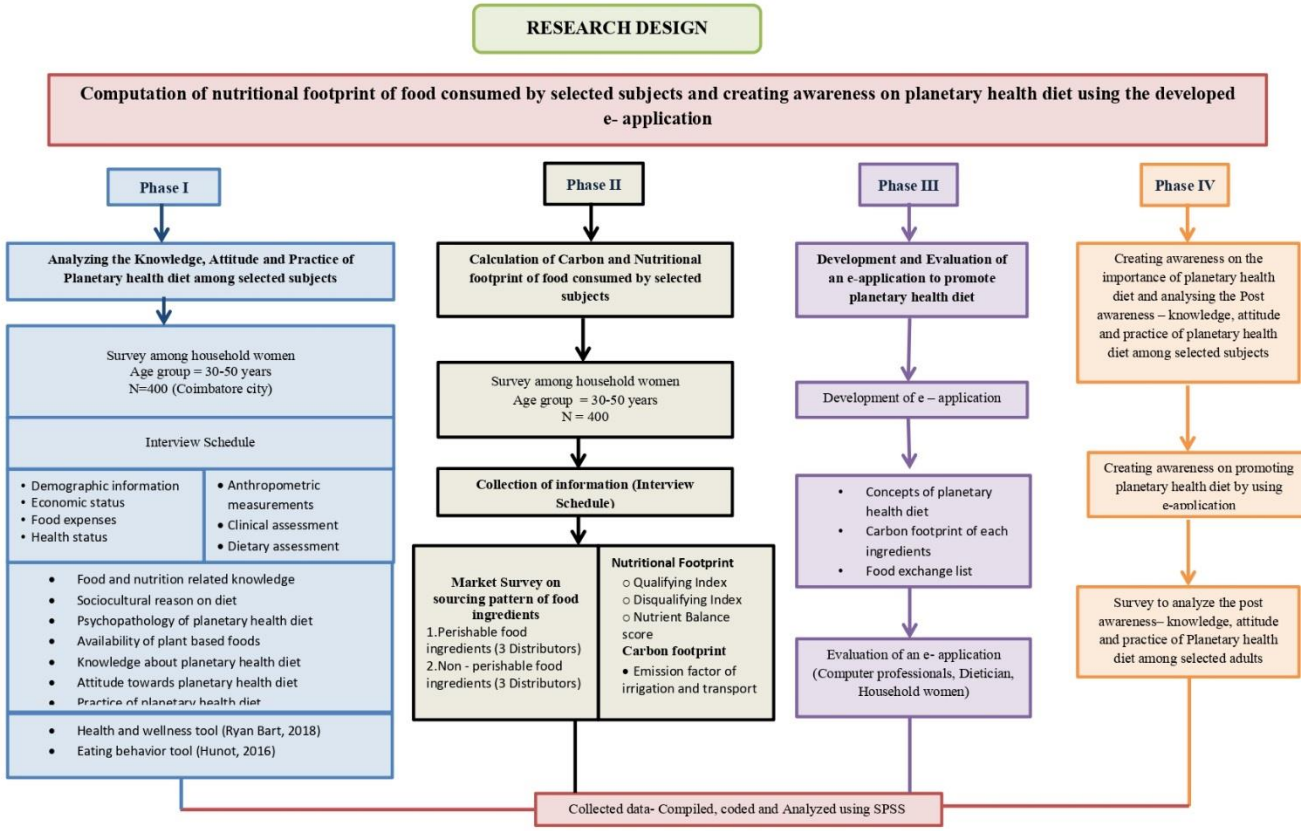
The methodology of the study titled "Computation of nutritional footprint of food consumed by selected subjects and creating awareness on planetary health diet using the developed e application" is discussed under the following phases,

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.



iv) Findings:

The salient findings of the study are summarized below:

Phase I - Analyzing the knowledge, attitude, and practice of planetary health diet among selected adult's subjects.

• The data has been collected to analyse the knowledge, attitude, and practice of planetary health diet among selected women in Coimbatore and the results are shown.

• The majority of the selected women are in the age group of 46- 50 years followed by the age group 41 – 45 years. More than half of the subjects are Hindus, followed by Muslims and Christians. Nearly 93% of the subjects are from nuclear families, and only 7% of them belonged to joint families. Ninety nine percent of the subjects are literate, whereas about 28 percent of the subjects have completed their undergraduate degree.

• It is clear that 36% of the subjects belonged to the lower middle class, followed by the upper middle class at 32%. Only 8 percent of the subjects belong to the upper class.

• The selected subjects have spent more than 1000 rupees per month on fast food, meat, and cereals based on their mean food costs. They do not spend much money on spices and ready-to-cook items. Even if consumed daily, they spend less on low-priced vegetables that cost them Rs. 425 (per month).

• There is a positive significant (p=0.001) association between Body Mass Index (BMI) and Waist Hip Ratio (WHR). This indicates that Waist Hip Ratio (WHR) increases with an increase in Body

Mass Index (BMI). From the current study it is understood that nearly 82 percent of Body Mass Index is dependent on Waist Hip Ratio. Body Mass Index increases with an increase in Waist Hip ratio.

- There is a significant association between the subject's socioeconomic level and their Body Mass Index (BMI), demonstrating that most subjects with normal BMIs and underweight conditions belonged to the upper middle class and were also the highest in overweight and obese subjects. Most overweight and obese-grade I, II, and III subjects were from the lower middle class. This suggests that there may be a relationship between an individual's body shape and their socioeconomic background.
- The significant negative relationship between diet pattern and Body Mass Index of the subjects of about 27 percent indicates that individuals who adhere to a flexitarian diet have a much higher likelihood of experiencing overweight and obesity. Two of the 11 subjects who follow a vegetarian diet are classified as underweight, while four fall within the normal BMI range.
- Approximately 34% of the subjects have comprehensive awareness of food's environmental and nutritional components. Furthermore, there is a significant relationship of about 44% between the subject's BMI and their knowledge about planetary health diet. This indicates that majority of the subjects are overweight and obese suggests that they are not adhering to this dietary approach. In conclusion, the result emphasizes the importance of enhancing both the food and nutrition related knowledge and promoting awareness of the planetary health diet to address the issue of obesity.
- A significant finding on the relationship between knowledge about the planetary health diet and attitude towards it. It demonstrates a substantial negative correlation of 62% indicates that while the subjects are aware of the benefits of planetary health diet, they do not adhere to it in their personal food choices. This illustrates a gap between the knowledge and practice concerning the planetary health diet.
- The results show that vegetarian subjects perform better regarding their intellectual and mental health compared to their physical health. On the other hand, non-vegetarian subjects display better physical health but faced challenges with their mental wellbeing. Additionally, when considering specific subgroups within the vegetarian category, individuals who follow an ova vegetarian, lacto vegetarian, or lacto ova vegetarian diet exhibit positive social behavior but struggle with intellectual health.
- A significant negative relationship between diet pattern and knowledge about the planetary health diet of about 27 percent means that even though the subjects possess awareness regarding the importance of the planetary health diet, they need to actively reduce their consumption of meat and other foods that have detrimental effects on the environment. Various socio-cultural factors could potentially influence this behaviour.

- The result shows a statistically significant positive relationship between knowledge about the planetary health diet and the eating behaviour of the subjects of about 20 percent. However, despite being aware of the principles of the planetary health diet, most of the subjects do not exhibit favourable eating behaviour, as they fail to fully embrace plant-based foods.
- A statistically significant negative relationship between the knowledge of the subjects and their adherence to the planetary health diet indicates that as awareness of the diet increased, the practice of following the diet decreased. It has been observed that many subjects who are aware of the numerous benefits associated with the planetary health diet are still unwilling to eliminate or reduce the consumption of meat and its products, as well as milk and its derivatives, eggs, fish, and processed foods from their daily intake.
- Among the 31 individuals who do not consume meat, 17 of them exhibited a normal Body Mass Index. Conversely, those who consume meat every week, twice a week, or every two weeks are more susceptible to obesity.

Phase: II Calculation of Carbon and Nutritional Footprint of the food consumed by the selected subjects

- The energy intake of subjects belonging to the age group of 36-40 years (1957±17.32) has found to be higher compared to other age groups. Furthermore, the subjects in this age range also have a higher consumption of carbohydrates compared to RDA guidelines.
- The figure highlights that foods such as fruits, vegetables, spices, pulses, and legumes are considered very good in terms of high QI as well as low DI. On the other hand, seafood, meats, milk, and its products also show high QI values but exhibit higher DI scores as well. Moreover, foods that contain saturated animal fats, sugars, or sodium tend to have lower QI scores.
- Green leafy vegetables are one of the food groups with a significantly lower carbon footprint and cause the least negative impact on the environment compared to other types of food. Following closely behind are vegetables and fruits, which also have relatively low environmental impact. On the contrary, meat and meat products as well as fish contribute substantially to carbon emissions and have a high carbon footprint. Cereals, although an essential part of our diet, have a notably high impact on the environment by way of higher emissions.
- The Qualifying Index of the subjects is found to be higher during lunch compared to other meals. During breakfast, the qualifying index of individuals aged between 46 and 50 years is higher than in other age groups. Similarly, during lunch, the qualifying index of subjects aged between 30 and 35 years was highest. Lastly, during dinner, the qualifying index of subjects aged between 30 and 35 was higher as well.

- The disqualifying index for breakfast is found to be the lowest compared to the other two meals. Additionally, when considering different age groups, the disqualifying index for the subjects in the 46–50-year age group is lower for breakfast, the 41–45-year age group exhibited a lower disqualifying index for lunch, and the same 41-45 year age group also display a lesser disqualifying index for dinner compared to other age groups.
- The breakfast meal consistently demonstrates a higher nutrient balance score than the other two meals. Furthermore, individuals in the age group of 30-35 years have higher nutrient balance scores across all meals throughout the day.
- The carbon footprint of breakfast is highest among individuals in the age group of 46-50 years, followed by those in the age group of 41-45 years. Additionally, when comparing the carbon footprints of the other two meals of the study subjects, it has been noted that individuals aged 30-35 years have higher carbon footprints than the rest of the subjects.

Phase III - Development and Evaluation of an e-application to promote planetary health diet:

- The e-application begins with a secure sign-up/login process using an email ID, ensuring smooth access for both new and existing users. After logging in, users must enter personal and anthropometric details such as name, age, gender, height, weight, and circumferences to calculate BMI and WHR, with relevant standards displayed for guidance.
- A menu icon on the top left provides access to profile editing, incognito mode, history (last two days), language selection (English, Hindi, Tamil), and sign-out options.
- The homepage features three main modules: the carbon and nutritional footprint calculator, the Planetary Health Diet (PHD) educational module, and the carbon footprint food exchange list, combining awareness and tracking functions.
- The carbon and nutritional footprint calculator includes a meal type menu (early morning to bedtime) and a food group menu with categories such as cereals, pulses, vegetables, fruits, dairy, meats, oils, and beverages; users select ingredients and input quantities for analysis. The result section displays nutrient intake versus RDA, carbon footprint based on food quantity, and a nutritional footprint with indices measuring quality and balance. • The second module contains a 52-slide PowerPoint presentation with voiceovers in English and Tamil, educating users about the PHD in a simple and engaging format. And the third module offers a food exchange list to help users substitute high-carbon foods with more sustainable options while meeting nutritional needs. **Evaluation of developed e-application**
- The app was evaluated by 30 users (10 computer professionals, 10 dietitians, and 10 household women), mostly aged 25–30, with all using smartphones and reporting no technical issues.

- Dietitians and household users found the app beneficial, easy to use, and recommended it to others; though a few noted it was slightly time-consuming, the font and readability were appreciated.
- Users praised the app's interface, responsiveness, and accurate calculation of BMI and WHR; dietitians especially valued the reliability of the results. Overall, the app was seen as practical, informative, and impactful in promoting the Planetary Health Diet, supporting sustainable food choices, and raising awareness about personal dietary habits.

Phase IV - Creating awareness on the importance of planetary health diet and analyzing the Post awareness – knowledge of planetary health diet among selected subjects.

- It is clear from the results that there has been a significant difference between pre and post food and nutrition related knowledge of selected women, which means that after being provided with awareness, the women subjects experience a noticeable improvement in their understanding and knowledge of food and nutrition.
- There is a significant difference between pre and post Socio cultural reasons for the diet of selected women. This disparity suggests that before raising awareness, women generally follow dietary practices followed by their family and friends, regardless of their health status. However, post-awareness, these women display a heightened sense of self-awareness and made dietary choices based on their individual preferences and health conditions.
- There is a significant difference between pre and post psychopathology of the planetary health diet, which means Initially, many subjects believed that adhering to a planetary health diet is challenging and that it lacks the necessary nutrients, possibly resulting in nutrient deficiencies and related issues. However, after the awareness session, they have begun to realize that the planetary health diet was indeed beneficial for both their personal well-being and environmental health.
- It is clear that there was a negative correlation between meat eating and post – knowledge and attitude. This implies that subject's views toward adopting planetary health diet have not changed even after there was increase in their knowledge level, nor has it had an impact on their meat consumption patterns.

Examiners

Internal Examiner :

Dr. Asha Kawatra, Professor
Department Foods & Nutrition,
College of Home Science,
CCS Haryana Agricultural University,
Hisar - 125 004.

External Examiner :

Dr Renuka Jayatissa
Department of Clinical and public health nutrition ,
No 17/1, Wijerama Road,
Gangodawila, Nugegoda, Sri Lanka,
Ph.No: +94777788444