Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Development and Cognitive Validation of a Culturally Appropriate Diet Diary for Sri Lankan Population

Vindya Rajakaruna

vindya@med.ruh.ac.lk

University of Ruhuna

Champa Wijesinghe

University of Ruhuna

Anuradhani Kasturiratne

University of Kelaniya

Research Article

Keywords: Dietary data collection, Dietary data collection tool

Posted Date: March 4th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-8647233/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Unhealthy dietary practices are a major modifiable risk factor for non-communicable diseases (NCDs) in Sri Lanka. Accurate assessment of dietary intake and eating behaviours is essential for effective prevention strategies; however, existing dietary assessment tools often lack cultural relevance and fail to capture contextual factors. This study aimed to develop and cognitively validate a culturally appropriate, paper-based diet diary for use in the Sri Lankan population. The diet diary was developed through a multi-step process involving a literature review and qualitative exploration of public perceptions on diet and diet recording. Findings informed the design of a structured 7-day diet diary incorporating local food items, photographic portion size guides, meal timing, eating context, hunger level, and mood. Expert review and participant cognitive validation were conducted to finalize the tool. The developed diet diary was found to be culturally relevant, user friendly, and easy to complete. This culturally appropriate diet diary provides a practical and comprehensive tool for dietary assessment in Sri Lanka and has potential application in population-based research and community-level interventions.

Introduction

According to World Health Organization (WHO), non-communicable diseases (NCD) account for 75% of the deaths globally and 73% of these deaths occur in low and middle income countries [1]. In Sri Lanka, according to the Indoor Morbidity and Mortality data, nearly 50% of the total deaths that occurred in government hospitals were due to major non communicable diseases such as cardiovascular diseases and diabetes mellitus [2]. While a number of factors are responsible for the rising incidence of NCDs, diet plays a major role as a behavioral risk factors [3], making dietary modification a much needed intervention for the prevention of NCD.

The concept of ‘healthy diet’ is based on ensuring energy balance to maintain a healthy weight, optimizing fat intake, increasing the consumption of plant based food and limiting the sugar and salt intake [4]. With the global nutrition transition in the South East Asian region, the dietary patterns of the population changed from a diet rich in legumes, vegetables and fruits into one that is high in carbohydrates, sugar and fats [5]. Moreover, the habit of eating homemade food evolved into consumption of commercially marketed fast food.

The findings of the WHO STEPS survey conducted in Sri Lanka reveal insufficient consumption of fruits and vegetables in 51.1% of the Sri Lankans [6]. With the changes of food systems and dietary habits of the population, better measurements and regular monitoring of dietary habits is crucial for the promotion of healthy eating. Reliable dietary survey data provide a sound basis for the formulation of policies and establishment of programs by the governments to promote healthy dietary habits in communities [7] .

To assess the dietary habits in-depth, a study of specific diet types or meal patterns is essential (8). A meaningful meal extends beyond its combination of food items and nutritional composition, referring to the event of eating and its accompanying cultural traditions, social norms as well as the meal timing, location and individual behavior and the mood while eating [8, 9, 10] Whether a person perceives an

eating occasion as a meal or a snack depend on food factors and environmental factors. A meal is defined as food items eaten as a part of a structured event, whereas a snack is defined as a food items eaten as a part of an unstructured event [11, 12].

The dietary pattern or characteristics of a meal is described with patterning (meal frequency, timing and regularity), format (types of food, sequence and nutritional content) and context (social setting, family involvement, eating location and related activities) [13]. Food journaling help people to recognize their own eating patterns and adopt healthier habits through self-reflection [8]. Similarly, diet recording is important in research and practice for assessing one's dietary patterns and eating contexts, with a view to identify problematic eating behaviours and recommend healthier alternatives [14].

Most of the existing tools used for diet recording focus on tracking nutritional intake, often neglecting contextual factors like emotions, sensations, and environmental influences that impact eating behaviors [15]. The traditional and widely used methods of dietary assessment include diet records (food diary), food frequency questionnaires, 24-hour recalls, and diet screening [7], and some of these methods are available in digital format as mobile applications [16]. The diet record or food record is a comprehensive recording of all food items, beverages, dietary supplements for three to seven consecutive days including both weekdays and weekend [16]. It is a real time food recording, which uses the estimates of the portion sizes with household measures. The strength of diet diary is the relatively accurate information on individual meals and eating frequency, while the decreasing completion quality over time is identified as a limitation [17]. The diet record is one of the most reliable methods for assessing individual food consumption [15, 18]. The paper based food diaries provide a convenient way to record diet and address short term memory limitations in self-reporting, while promoting healthier eating habits through self-reflection [15].

To improve accuracy and ease of food journaling / diet recording, researchers have explored the utility of photographic food diaries [15], especially for the portion size estimation. Based on the validation and comparison studies, photographic portion size estimation was found to be more accurate than the traditional diet data collection models where the participants quantify food according to their own household measurement units which will differ from house to house [19]. Measuring food using household scales, estimated models and aids or pictures also improve the quality of data [20, 21]. Structured format of recording has been proven to reduce the respondent burden and improve the data quality [21].

With the development of technology, dietary tools administered through mobile applications and computerized systems have become increasingly popular globally [22]. Technology based dietary assessment tools, including digital questionnaires, and image sensor based recognition have been increasingly used in developed countries to overcome the client fatigability with traditional methods [23]. The use of these applications requires a high digital literacy, which could be a challenge in low- and middle-income countries. In Sri Lanka, the digital literacy in urban sector is 43.6%, in rural sector 29% and in estate sector 12.6%, with the highest digital literacy rate of 34.3% observed in the most populous and

urban Western Province and the lowest of 11.8% in the Uva Province of the country. This discrepancy in digital literacy makes the use of digital applications for diet recording impractical in routine practice or in population-based research.

Despite the availability of advanced technology and image-based tools to improve efficiency of diet recording, the challenges in ensuring accuracy and data management remain. Image-based dietary assessments are often combined with automated food recognition software and portion estimation reducing the participant burden, the vast amount of collected images remains a challenge [24]. Similarly, though the mobile applications are becoming popular among the younger and urban populations, the older or rural populations may prefer traditional methods to record their dietary intake [25]. Further, according to a meta-analysis on energy and macronutrient comparisons these diet record apps were found to underreport energy and macronutrients relative to more traditional dietary assessment methods [26].

This paper attempts to describe the development and cognitive validation of a paper-based diet record with culturally appropriate features to be useful for the majority rural population in Sri Lanka .

Methods

This diet record was developed as a preliminary step of a larger study assessing the dietary patterns, nutritional status and the body composition in relation to predicted cardiovascular risk among the population of the districts of Kegalle and Ratnapura Sri Lanka.

The development of the diet diary was conducted in three steps as follows.

1. Review of existing literature on perception of diet and currently used tools for dietary data collection
2. Assessment of the perception of diet and the experience and expectations on a standard dietary data collection tool among the target population
3. Combination of the findings of the above two steps to develop a culturally appropriate 7-day diet diary

Review of the existing literature

A comprehensive literature review was conducted using scientific databases; to identify the concept of diet and the existing diet data collection tools and their strengths and limitations. The key search terms were “diet”, “dietary assessment”, “dietary assessment tools”, “portion size estimation” and “dietary behaviour” . Based on the findings the conceptual framework for the development of culturally apt diet diary was decided.

Assessment of the perception of diet and diet recording among target population

A qualitative study was conducted in the Warakapola Medical Officer of Health unit area, Kegalle district, Sri Lanka using three focus group discussions to explore public perception on diet and diet recording. A

purposive sampling method was used to recruit 30 adult participants representing diversity in gender, age, educational level and occupation. Prior to the discussions, participants were provided with standard diet diary to record all food and beverages consumed over a week. Each discussion lasted around 40 minutes, was conducted in Sinhala language and audio recorded with supplementary filed notes. Transcripts were translated into English and subjected to manual content analysis. Coding and theme development were performed inductively [https://doi.org/10.21203/rs.3.rs-6666274/v1]

Development of the diet diary

With the findings of the above two components, the development of the diary was carried out with the purpose of developing a culturally apt diet diary with ease of understanding and completion, appropriateness of food categories with local pictures to create familiarity, with adequate space and necessary instructions.

Pre-testing

Experts' feedback: The first version of the culturally appropriate diet diary was sent to five experts in the field of nutrition for further evaluation of the content and format.

Participants' feedback: The second version of the diet diary improved according to the experts' feedback was pretested among 12 participants at Divisional Secretariat Office, Warakapola and written feedback was obtained.

Ethical considerations

Ethical clearance for the study was obtained from the Ethics Review Committee, Faculty of Medicine, University of Kelaniya, Sri Lanka (P/23/04/2022).

Results

Several important features that should be included in a scientifically sound, culturally appropriate and user-friendly diet recording tool were identified through review of literature and focus group discussions on perceptions of diet and diet recording among the target population.

Literature review

In the literature, the meal is described as a combination of different food categories with a certain energy content to fulfill the physiological needs, involving individual's emotional desires and experience with a cultural and social significance. Therefore, a meal, in a broader sense, is related to the eating context such as the occasion, place, social interactions and the emotions experienced while having the meal. On the other hand, dietary patterns consist of patterning (meal frequency, timing, regularity or skipping), format (food types, sequence and nutritional context) as well as the context (social setting, family involvement, eating location, engagement in activities such as watching television while eating).

Hence, it was evident that a comprehensive dietary assessment tool should capture all these aspects to provide rich data on dietary patterns and eating behaviours.

The most common dietary assessment methods in research include diet records, 24 hour dietary recalls, and food frequency questionnaires while screening tools are often used in laboratory based studies. The major drawbacks of the currently practiced dietary records identified during the literature survey included neglecting contextual factors, respondent fatigue, selection bias due to mode of administration and reactivity bias. The findings suggested the need to improve the diet recording tool by providing a structured format for recording meals with lists of names of food items, inquiring on time and location of meals and providing photographic aids to accurately estimate the portion sizes.

The highly technical applications with video and audio and digital applications for mobile phones are already available locally and globally. However, with the recent economic instability and the prevalent socio-economic conditions of the country, such tools are not a feasible option for the majority.
Therefore, based on the above findings, the following criteria were adopted in the development of a culturally appropriate diet recording tool for the Sri Lankan community.

1. A structured format to be filled up as a diary page, designed to include the information on food intake during major meals such as breakfast, lunch and dinner, with two snacking occasions in between breakfast and lunch as well as lunch and dinner. It was decided to provide separate spaces to record the food item, portion size and time of consumption.

With this information it would be possible to assess the nutrient value and adequacy of intake of different nutrients. In addition, inclusion of data on meal timing helped to assess the frequency and patterning of meals.

2. A separate section to record additional information on the context of meals which included following details.

- with whom and where the person has had the meal to assess the context of meals

- the hunger level before the meal and after the meal to assess the physiological drivers of the food intake

- the mood at the time of meal intake to assess the emotions/psychology

3. Provision of photographic aids of commonly consuming food items to help estimation of portion sizes

Findings of the Focus group discussions

Finding of the focus group discussions revealed the participants' perceptions and awareness of certain factors which determine a persons' meals or dietary intake as well as their experience and expectations

on diet recording. These findings were used as a guide to revise the diet diary to make it more culturally appropriate and user -friendly.

The participants' perceptions of a 'meal' were mainly based on the food types and nutritional value rather than on calorie content of the food. Several factors that determine their daily meals or food intake were identified; i.e. individual factors, family factors, availability of the food item, special occasions, time factor and socio-economic factor and it was evident that only a few of these factors will come into play in a specific situation. Therefore, collecting information on these influencing factor would be important in interpreting the dietary patterns / behaviours and giving feedback.

The participants expressed the need to have guidance notes on filling the diet dairy with written instructions, convenience in filling, a more attractive appearance and information to improve their knowledge on diet.

Based on the above finding, it was decided to design the diary with an attractive cover page, notes on the importance of maintaining the diet diary to motivate the respondents, instructions on how to fill the document (including an example page) and some options to tick to make the document interesting and user-friendly.

Findings of the focus group discussions were published in detail in the article "To eat and to know what you eat": exploring perceptions on diet and diet recording among people in a Sri Lankan locality (27)

Designing the diet diary

[Developed diet diary provided as a supplementary file]

Cover page: A picture of a family at a meal time was considered appropriate for cover page as family factors affected the diet and nutrition on most occasions. Further, relating to family gives more significance to the document in the Sri Lankan cultural context. The image was generated using freely available AI tool 'Midjourney'. No humans were involved in pictures.

Guidance notes: Participants' experiences on benefits of diet recording (e.g. being conscious on what they eat, the need to burn the calories consumed and the intention to cut down certain food items /portion sizes according to their disease status) were used to develop the guidance notes on importance of filling the diet diary.

Picture guide: A detailed picture guide was provided for the estimation of the number of servings of commonly consumed food items in Sri Lanka using commonly used utensils.

Example page: To give a clear idea of how to make the entries in the diet diary, an example was provided by filling the first page of the diary.

Diary proper: The sections to be filled in the diary were arranged in separate columns which included the food items, the portion size or the servings of each food with the time of intake. A day's food intake

started with bed tea or water and then continued as breakfast, morning snack, lunch, evening snack and dinner. This was believed to help the respondents remember the common meals they usually have per day.

Apart from the basic diet diary format, a separate column was included parallel to the description of meals to record their hunger level with two additional columns to record the eating context such as where and with whom they take the meal. As suggested in the literature, these details were important in describing the pattern of the meal for the interpreter. The details could be recorded by ticking the appropriate option off a list of response alternatives, which improved user-friendliness as expressed during the discussions with the potential participants. Further, two separate tables were added to enter the fluid intake within the day, one table for the amount of water and other for the common drinks and beverages consumed by the person per day.

Improving awareness on healthy eating: As suggested by the participants of the qualitative inquiry, a section on healthy eating guidelines was developed as an appendix to the diet diary. However, considering the influence it can have on the habitual intake, it was issued as a separate booklet after completing the diet diary when the participants returned to the healthcare worker for the feedback. This nutrition education booklet included information on how to prepare balanced meals at a low cost and the guidelines on physical activity.

Pre-testing

The final version of the culturally appropriate diet diary was sent to five experts in the field of nutrition for further evaluation of the content and format. Based on their comments, some minor corrections were made in the picture guide, including the picture size and quality. The clarity of the instructions was improved with changes of the wording in Sinhala and Tamil versions. Further, some improvements of the example page were done as suggested by experts, such as including the method of preparation of the curry (milk based or chili based).

This revised format of the diet diary was pretested among 12 participants at Divisional Secretariat Office, Warakapola and written feedback was obtained. The participants unanimously agreed that its user friendly and helpful in keeping an account of their food intake. Although some participants requested to include a master food list from which each food item consumed can be selected, it was practically not possible in a paper based format. After the pre-testing, the final version was prepared in all three languages Sinhala, Tamil and English.

Discussion

The purpose of this study was to develop a dietary data collection tool to assess the dietary intake and the eating behaviours among Sri Lankan population, which would overcome the limitations of the existing tools. Several approaches were used to identify the essential features of a scientifically sound

and user friendly diet recording tool, which were incorporated in designing the culturally appropriate diet diary developed in this study.

During the focus group discussions on the experience on diet recording, the concepts of user friendliness and maintaining interest emerged as key findings. To fulfill these requirements, a culturally relevant diet diary was developed with the pictures of the common food items consumed by people and the usual utensils used in Sri Lankan kitchens for food handling. This enabled estimation of portion sizes easily and accurately as mentioned in the previous literature [21, 28]. To make the diet recording interesting, ticking options were given to mark the hunger level and eating context such as where and with whom they took the meal. The diary pages were structured to make it user friendly and all the instructions on how to fill the diary were given at the beginning with a filled example page.

In the analysis of the currently used dietary data collection tools, neglecting contextual factors such as emotions, sensations, and environmental influences which has an impact on behavior was identified as a major drawback [15]. Therefore, new sections were included to record the participants' level of hunger before and after meals, reflecting the physiology which provide the sensation to eat [28, 29, 30]. Further, the inclusion of a section to record their mood provided the opportunity to identify emotional eaters. As emotions play a role in having a meal by a person [31], the information on mood would be useful in identifying triggers of unhealthy eating patterns. The environmental and the social factors that are much related with the meals of individuals [9, 11, 32,33] such as the place of eating and accompanying persons could also be accounted for in the current format, enhancing the understanding of their influence on dietary patterns and behaviours of the Sri Lankan population.

The need for prior training was another drawback observed in currently practiced diet recording [21]. Since Sri Lankans are a highly literate population with a literacy rate of 93.3% [34], providing detailed written instructions on how to fill the diet dairy along with an example page was found to be sufficient to guide the participants. This will overcome the need of prior training, making the application of the tool easier and more user friendly.

Another major limitation of the currently practiced dietary records is the need of higher motivation to complete the process [21]. This newly developed diet dairy included a section that listed out the benefits of dietary record keeping which will provide the motivation for the respondents to continue maintaining the diary for 7 days throughout.

In previous research on diet data collection tools, the existing tools were known to burden the respondents [21, 28, 35]. To reduce the burden of filling the diary, several features such as having a structured diary page with prompts on the routine meals/snacks, a place to record the timing of meals, a separate spaces to record drinks and the items missed from the main table, a picture guide with photographs to select the portion size easily and a set of responses to tick were included in the newly developed diet diary.

The uncertainty of the documentation due to difficulties in estimating the amount of ingredients, preparation of the food items and portion size is another limitation documented [35]. The inclusion of the picture guide of common Sri Lankan utensils and the portions of common food items help the client to accurately estimate the portion size. The example page encourages to enter the preparation method as chilly based, milk based or oil based on the common methods of preparing Sri Lankan curries. However, calculating the amounts of minor ingredients such as spices will be difficult even with this newly developed diet diary.

The tendency to conform to social desirability and the poor quality of diet resulting from economic constraints can lead to under reporting of the actual diet as reported in the previous studies on dietary assessment tools [21, 28]. This was another major concern in diet recording, but this limitation remain with this newly develop diet diary as well.

Reactivity bias and the potential alteration of eating behavior due to self-awareness on dietary pattern has also been identified as a limitation of diet recording in previous studies [21, 28]. This possibility could not be avoided in this newly developed diet dairy. Though it is a limitation in assessing the individuals' dietary behavior, it will be beneficial if the diet diary is used as a tool for interventions targeting the promotion of healthy dietary patterns among individuals.

Conclusion

The newly developed diet diary demonstrates several strengths that makes it user friendly, culturally appropriate for the Sri Lankan population and yet scientifically well pronounced. It integrates both nutritional and contextual dimensions of eating behavior. It is well structured with a design of a day-wise format enabling comprehensive assessment of dietary frequency, timing and portion sizes as well as being user friendly. The photographic portion size aids with familiar local utensils and the local food items improve the accuracy of portion size estimation. Attractive layout and motivational notes provided at the beginning further improve the completion of data and will be beneficial for the researchers as well.

As a recommendation for further improvement of this diet dairy, it will be beneficial to provide a section to record disease status and treatments, particularly for the patients with diet-related non-communicable diseases. As these health conditions require diet control and certain medications can affect their desire to eat, documenting this information would help evaluate the changes in dietary behaviour as well as the improvement in disease status with adherence to the prescribed diet.

Declarations

Ethics approval and consent to participate

The authors declare that Ethical approval for the study was obtained from the Ethics Review Committee, Faculty of Medicine, University of Kelaniya (Registration No. P/23/04/2022). Administrative approval was

obtained from all relevant authorities for the relevant data collection (District Secretariat Kegalle District, Regional Director of Health Services-Kegalle District, Medical Officer of Health, warakapola). Since this study was to design a culturally appropriate diet diary there was no direct participation of the human participants other than the research team and the participants involved in focus group discussions to assess the perception on diet and diet data collection tools. These ideas were already published as “To eat and to know what you eat”: exploring perceptions on diet and diet recording among people in a Sri Lankan locality and was cited in this article under result section. Informed written consent was obtained from all participants before data collection. Study was conducted while adhering to the World Medical Association Declaration of Helsinki on ethical principles for medical research involving human subjects.

Consent for publication

In the current study consent for publication is not applicable as no individual-level data with identification was included in the manuscript.

Availability of data and materials

The final version of culturally appropriate diet dairy in English, Sinhala and Tamil languages are available in the following link.

https://drive.google.com/drive/folders/1f_xrhVFyxFgBjtp244kTv7YR_yGNP3Cv?usp=drive_link

Competing interests

The authors declare that they have no competing interests.

Funding

The study was self-funded by the corresponding author.

Author contributions

Rajakaruna VPC did the development of the culturally appropriate diet dairy, relevant data collection, content analysis and manuscript writing. Wijesinghe CJ and Kasturiratne have supervised the development of the tool. All authors read and approved the manuscript.

Acknowledgment

Authors acknowledge the subject experts who have provided the feedback on version 01 of culturally appropriate diet diary, Dr. K A D C Gunasekara, Ms. Thilini Chandrasiri, Dr. Lathika Athauda from University of Kelaniya, Prof Chnadima Wickramathilake from University of Ruhuna, and Dr. Theelan Chelvi for providing all the guidance in Tamil language.

References

1. WHO. noncommunicable-diseases @ www.who.int [Internet]. Available from: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases?
2. Ministry of Health. Annual Health Bulletin. 2023;
3. WHO. Noncommunicable-Diseases @ Www.Who.Int [Internet]. 2022. Available from: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases
4. Hatherall D. Global strategy on Diet, Physical Activity and Health. WHO. 2004;2002(May):314–23.
5. No Title. p. https://www.who.int/southeastasia/health-topics/nu.
6. Biswas T, Townsend N, Gupta R Das, Ghosh A, Rawal LB, Mørkrid K, et al. Clustering of metabolic and behavioural risk factors for cardiovascular diseases among the adult population in South and Southeast Asia: findings from WHO STEPS data. Lancet Reg Heal - Southeast Asia [Internet]. 2023;12:100164. Available from: https://doi.org/10.1016/j.lansea.2023.100164
7. World Health Organization (WHO). Guidance for monitoring healthy diets globally [Internet]. Available from: https://www.who.int/publications/i/item/9789240094383
8. Achananuparp P, Lim EP, Abhishek V. Does journaling encourage healthier choices? Analyzing healthy eating behaviors of food journalers. ACM Int Conf Proceeding Ser. 2018;2018-April(2):35–44.
9. Rattan SIS, Kaur G. Nutrition, Food and Diet in Health and Longevity: We Eat What We Are. Nutrients. 2022;14(24):1–7.
10. Ha O, Lim S. The role of emotion in eating behavior and decisions. 2023;(December):1–7.
11. C. B. SANJEEVI AK DAS, SHTAUVERE-BRAMEUS A. Dimensions of the meal. Ann New York Acad Sci. 2002;958:293–6.
12. Wansink B, Payne CR, Shimizu M. 'Is this a meal or snack?' Situational cues that drive perceptions. Appetite. 2010;54(1):214–6.
13. Leech RM, Worsley A, Timperio A, McNaughton SA. Understanding meal patterns: Definitions, methodology and impact on nutrient intake and diet quality. Nutr Res Rev. 2015;28(1):1–21.
14. Martins ML. Dietary Surveys and Nutritional Epidemiology. 2025;(Contribution 1):10–3.
15. Zhang Y, Parker AG. Eat4Thought: A design of food journaling. Conf Hum Factors Comput Syst - Proc. 2020;
16. Bailey RL. HHS Public Access. PMC. 2021;91–6.
17. Illner AK, Freisling H, Boeing H, Huybrechts I, Crispim SP, Slimani N. Review and evaluation of innovative technologies for measuring diet in nutritional epidemiology. Int J Epidemiol. 2012;41(4):1187–203.
18. Ortega RM, Perez-Rodrigo C, Lopez-Sobaler AM. Métodos de evaluación de la ingesta actual: Registro o diario dietético. Nutr Hosp. 2015;31:38–45.
19. Amoutzopoulos B, Page P, Roberts C, Roe M, Cade J, Steer T, et al. Portion size estimation in dietary assessment: a systematic review of existing tools, their strengths and limitations. Nutr Rev. 2020;78(11):885–900.

20. Park Y, Dodd KW, Kipnis V, Thompson FE, Potischman N, Schoeller DA, et al. Comparison of self-reported dietary intakes from the Automated Self-Administered 24-h recall, 4-d food records, and food-frequency questionnaires against recovery biomarkers. Am J Clin Nutr [Internet]. 2018;107(1):80–93. Available from: https://doi.org/10.1093/ajcn/nqx002
21. Ortega RM, Perez-Rodrigo C, Lopez-Sobaler AM. Dietary assessment methods: dietary records. Nutr Hosp. 2015;31:38–45.
22. Cade JE, Warthon-Medina M, Albar S, Alwan NA, Ness A, Roe M, et al. DIET@NET: Best Practice Guidelines for dietary assessment in health research. BMC Med. 2017;15(1):1–15.
23. Zhao X, Xu X, Li X, He X, Yang Y, Zhu S. Emerging trends of technology-based dietary assessment: a perspective study. Eur J Clin Nutr. 2021;75(4):582–7.
24. McClung HL, Ptomey LT, Shook RP, Aggarwal A, Gorczyca AM, Sazonov ES, et al. Dietary Intake and Physical Activity Assessment: Current Tools, Techniques, and Technologies for Use in Adult Populations. Am J Prev Med [Internet]. 2018;55(4):e93–104. Available from: https://doi.org/10.1016/j.amepre.2018.06.011
25. Mbmsc AT, Flood VM, Lamonica HM. Older adults ' needs and preferences for a nutrition education digital health solution : A participatory design study. 2024;(November 2023).
26. Zhang L, Misir A, Boshuizen H, Ocké M. A Systematic Review and Meta-Analysis of Validation Studies Performed on Dietary Record Apps. Adv Nutr. 2021;12(6):2321–32.
27. Rajakaruna VPC, Wijesinghe CJ, Chandana GJ, Athauda LK, Kasturiratne A. " To eat and to know what you eat ": exploring perceptions on diet and diet recording among people in a Sri Lankan locality. 2025;
28. Thompson FE, Subar AF. Dietary assessment methodology [Internet]. Fourth Edi. Nutrition in the Prevention and Treatment of Disease. Elsevier Inc.; 2017. 5–48 p. Available from: http://dx.doi.org/10.1016/B978-0-12-802928-2.00001-1
29. Mela DJ. Determinants of food choice: relationships with obesity and weight control. Obes Res. 2001;9 Suppl 4(November).
30. Karanja A, Ickowitz A, Stadlmayr B, McMullin S. Understanding drivers of food choice in low- and middle-income countries: A systematic mapping study. Glob Food Sec [Internet]. 2022;32:100615. Available from: https://doi.org/10.1016/j.gfs.2022.100615
31. Leng G, Adan RAH, Belot M, Brunstrom JM, De Graaf K, Dickson SL, et al. The determinants of food choice. Proc Nutr Soc. 2017;76(3):316–27.
32. Wongprawmas R, Mora C, Pellegrini N, Guiné RPF, Carini E, Sogari G, et al. Food choice determinants and perceptions of a healthy diet among Italian consumers. Foods. 2021;10(2).
33. Roshita A, Riddell-Carre P, Sjahrial R, Jupp D, Torlesse H, Izwardy D, et al. A Qualitative Inquiry into the Eating Behavior and Physical Activity of Adolescent Girls and Boys in Indonesia. Food Nutr Bull. 2021;42(1_suppl):S122–31.
34. Central Bank of Sri Lanka. Annual Economic Review 2023 [Internet]. Central Bank Report. 2023. Available from: https://www.cbsl.gov.lk/en/publications/economic-and-financial-reports/annual-

economic-review/annual-economic-review-2023

35. Daniel E Shumer, Natalie J Nokoff NPS, Erin C. Dowd, M.D.a, Michael J. Frank, Ph.D.b, Anne Collins, Ph.D.c, James M. Goldd, and Deanna M. Barch PD. Barriers and Negative Nudges: Exploring Challenges in Food Journaling HHS Public Access. Physiol Behav. 2017;176(12):139–48.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Dietdairy3proper.pdf