BMC Public Health

RESEARCH Open Access

"To eat and to know what you eat": exploring perceptions on diet and diet recording among people in a Sri Lankan locality

V. P. C. Rajakaruna[1,2*], C. J. Wijesinghe[1,2], G. J. Chandana[1,2], L. K. Athauda[3] and A. Kasturiratne[3]

Abstract

Improving nutrition through dietary modification is important for prevention of non-communicable diseases. Lack of culturally-apt diet recording tools undermine the accurate assessment of dietary behaviors of a population, in research and practice. This study aimed to explore public perceptions on diet and diet recording in the Sri Lankan setting, as a preliminary step in designing a diet recording tool that reflects local food culture and eating habits. Three focus group discussions were conducted among a heterogeneous, purposively selected sample of 30 adults to identify perceptions on diet and diet recording, following completion of a standard food diary. Content analysis identified six key themes: i.e. definition of a meal, knowledge on calories, determinants of diet, benefits / difficulties in diet recording and expected improvements of the diet diary. The understanding of a meal, calories and determinants of diet were major components in the perceptions of diet. Individual, family, food, occasion and time-related and socioeconomic factors were identified as determinants of daily diet. Participants stated that documenting diet is useful to define health, nutritional components of a meal and diet control, while time constraints emerged as a limitation. Participants expected a user-friendly diet recording tool to include information on balanced diet and diet-related diseases, attractive appearance, instructions and food lists to choose from. These findings are important in designing culturally appropriate tools for the assessment and self-monitoring of the diet in the management of non-communicable diseases.

Keywords Diet, Diet recording tools, Perception of diet, Experience of diet recording

Introduction

Diet is recognized as an important determinant of the quality of life as well as the progression of diseases [1]. Healthy diet is considered as a basic human right and it is essential to maintain a healthy life by ensuring prevention of malnutrition and reducing the risk of non-communicable diseases (NCD) such as heart diseases, diabetes mellitus and diet-related cancers [2]. Consumption of a healthy diet is vital to maintain a healthy weight by achieving energy balance.

The key properties of a healthy diet requires ensuring sufficient intake of macronutrients, micronutrients and energy to meet the requirement without excess,

*Correspondence:
V. P. C. Rajakaruna
vindyadoc@gmail.com; vindya@med.ruh.ac.lk
[1]Department of Community Medicine, Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka
[2]Center for Public Health Nutrition Education and Research, Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka
[3]Department of Public Health, Faculty of Medicine, University of Kelaniya, Gampaha, Sri Lanka

maintaining appropriate balance of macronutrients (carbohydrates, proteins and fats), maintaining the diversity of diet by consuming a wide variety of food groups and limiting the food groups that are associated with the development of non-communicable diseases [2, 3]. Hence, the recommendations for a healthy diet include increasing consumption of fruits, vegetables, legumes, whole grains and nuts, limiting energy intake from total fats, replacing saturated fats with unsaturated fats and eliminating trans fatty acids, reducing the intake of sugars and limiting salt consumption [4].

With the global nutrition transition and the influence of European colonisation in the in South Asian region, the population rapidly altered their food choices from a diet rich in unrefined grains, legumes, vegetables and fruits to one that is rich in refined carbohydrates, sugar and fat [5–7]. Similarly, their food habits changed from consumption of home-made, minimally processed food to a highly processed food consumption and eating/dinning out [6].

With the effect of global and regional nutrition transition, Sri Lanka, too, experienced similar changes in the dietary behaviour of its population [8]. Presently, Sri Lankan diet mainly consist of high amounts of starch and pulses with less amount of dairy products, fruits and vegetables [9]. Recent research evidence confirms that a considerable proportion of the Sri Lankan population does not consume a diverse and balanced diet, leading to unhealthy eating habits such as overconsumption of starchy meals and added sugar [10, 11].

Incorporating these recent evidence, the Ministry of Health, Sri Lanka, in collaboration with Food and Agriculture Organization, released an updated version of culturally adapted food based dietary guidelines for Sri Lankans in 2021, which recommends consumption of balanced meals with whole grains, at least two vegetables including one leafy green and two fruits daily, plant based proteins such as pulses along with egg, fish or lean meat, nuts and milk or fermented dairy, while limiting salt, sugary and processed foods [12]. Such country-specific general guidelines are widely used globally to promote overall health and well-being of the populations and reduce the NCD burden [13, 14]. Nevertheless, a better understanding and continued monitoring of the dietary habits is much needed for the promotion of healthy eating at individual level and for the establishment of policies and programs by the governments targeting communities [2].

A meal from food science perspective is described with the components, portion size, nutrient composition and energy content, while in nutrition and health perspective it is described in relation to dietary or nutritional guidelines, specific nutrient components and related health outcomes [15]. However, in cultural and communication perspectives a meal is viewed as a social linkage with family and a family meal is considered as a cultural icon. Hence, any attempts at evaluating the dietary intake of a specific population would require culture-sensitive methods to accurately capture their food choices and eating patterns.

Food choices are influenced by a range of factors including health perceptions, psychological and sociocultural aspects, sensory appeal, and socio demographics as well as ethical concerns, social interactions and environmental elements like affordability and availability of food, convenience and marketing [16]. Additional influences such as family and genetic background, palatability, alcohol consumption, food labeling and attention to food waste also affect the food choices [17, 18]. Although the nutrition knowledge is positively associated with healthier food choices, knowledge of calorie content does not show the same effect, and individuals who are overweight or obese may show a preference for energy dense foods due to physiological and psychological factors [19, 20]. Moreover, in Sri Lankan culture, food choices are often influenced by the perceived medicinal values of food and the traditional hot-cold classification system rooted in Ayurvedic principles, which becomes specially significant during life stages such as pregnancy, lactation, infancy and illness [21–23]. Other cultural practices such as meal sharing and group eating have also been observed particularly in workplace settings, making them important determinants of dietary intake [24]. Therefore, understanding these food choice behaviors is beneficial in dietary modification for the prevention of non-communicable diseases as well as in establishing nutrition related policies [18, 19].

The existing diet recording tools used in Sri Lanka have been developed focusing mainly on the nutrient intake and do not take into account the contextual and psychosocial factors surrounding the food choices and eating habits of the population. Hence, the development of a culturally grounded diet recording tool based on observations of the stakeholders and in discussion with the local communities is an important step towards accurate study of the dietary patterns and eating behaviours in the local context. Further, understanding the interests and challenges of diet recording among the end-users will facilitate the development of a user-friendly tool that will ensure satisfactory compliance. Such co-design research would provide much beneficial evidence to develop population-specific interventions [25], facilitating their acceptance and adherence by the target communities, as emphasized by a study done in Singapore on the importance of considering cross cultural and traditional food practices when designing dietary interventions [26]. Further, addressing the expectations of a diet diary by the users [27] will also enhance the acceptability of the document by the users.

Therefore, this study was conducted with the aim of understanding the perceptions of diet and diet recording in a representative group of Sri Lankan adults with a view to develop a culturally-apt diet recording tool. The study is the preliminary step of a larger study assessing the dietary patterns, macronutrient intake and nutritional status in relation to the cardiovascular risk among the population of Kegalle District in Sri Lanka. The findings will be used to develop a diet diary that can be used both as a dietary data collection instrument and a self-monitoring tool that is attuned to the local context, for future use in the management of diet-related chronic diseases and their complications among the general population.

Methods

Study design, setting and participants

This study used a qualitative, phenomenological design which consisted of three focus group discussions conducted in Warakapola health unit area, Kegalle District, Sabaragamuwa Province, Sri Lanka. Purposive sampling was carried out to include both males and female adults representing different ages, educational levels and occupations to ensure the diversity of the information collected. Following discussions with the Medical Officer of Health of the area, three settings in Warakapola; namely, Alpitiya Public Health Midwife area ($n=09$), Tholangamuwa Central Collage ($n=10$) and Warakapola Divisional Secretariat Office ($n=11$) were selected to recruit the participants for the focus group discussions. These three settings included rural and semi urban populations, representing the majority of the Sri Lankan population.

Table 1 Focus Group Discussion Guide

Discussion guide
1. I am going to start with some questions about your diet or what you eat daily. What sort of ideas or information do you have regarding diet? When I say diet what sort of ideas come into your mind? How do you describe your general view of diet?
2. How many meals do you usually take per day, including main meals and short meals like snacks?
3. Do you know the nutrient categories that consist your diet? a. Have you heard of macronutrients such as carbohydrates, protein and lipids (fat)? b. Have you heard of micronutrients such as vitamin, iron, zinc, iodine? c. What do you think about a balanced diet?
4. Do you think about the nutrient categories when you prepare your meal? What are the other factors you take in to account when you prepare your meal? [Taste, menu, financial status, fuel availability, meals to send to the schools for kids, with whom you are going to eat etc.]
5. Do you think your weight depends on your meal? Why do you think so?
6. What are the difficulties you faced when you filled the 7-day food diary given to you?
7. What are the interesting things you feel about filling the diary?
8. Do you think it is a difficult task to fill the diet diary to assess your food intake? If so why?

Once the participants were recruited, a standard diet diary used previously in 'The iHealth T2D study' [28] was distributed to record their dietary intake. The diet diary included eight pages with the first page filled as an example and was designed to record the date, items of food or drinks consumed during the day and the amount of each food or drink consumed as estimated in household measurements such as spoons, cups etc. The participants were asked to fill the diet diary for seven consecutive days to gain an initial experience on diet recording and the instructions were provided verbally on maintaining the diet diary. So that they will be able to meaningfully contribute in the subsequent discussions.

Focus group discussions

The focus group discussions were conducted using a discussion guide that contained an introduction to the discussion and guidance questions. The discussion guide (Table 1) was developed by the research team specifically for the purpose of this research and the questions were based on the findings of a thorough literature review conducted covering two domains: i.e. the perception of diet and dietary behaviors and the experience of maintaining the diet diary including the benefits and difficulties identified during diet recording. It was pretested on five individuals with diverse socio-economic backgrounds to identify the appropriateness of the questions, clarity, wording and flow of ideas to ensure that the discussions would be likely to elicit rich descriptive responses.

Data collection

The focus group discussions were carried out in a comfortable room with no disturbances. Written, informed consent was obtained from all participants prior to the discussion. The discussions started with a brief introduction of its purpose by the moderator. The participants were allowed to freely express their ideas, but were directed if necessary facilitating them to express their ideas on the topic. Each discussion lasted approximately 40–60 min. All discussions were conducted in Sinhala and were audio-recorded. In addition, contextual notes were taken and observations were recorded during the discussion and this information was used to identify the participants' index according to seating arrangements and to note the one silent participant.

The discussions were focused on their ideas of what a meal or diet is, how many meals they usually consume per day, ideas and knowledge on calories and nutrients, factors affecting the preparation or consumption of a meal, the idea of connection between the meals and the health, their experience of completing the diet diary including the challenges encountered and the aspects of diet recording that participants have found engaging and motivating. At the end of the sessions, the key points

discussed were summarized and the participants were given the opportunity to express any final thoughts or observations before concluding the discussion. The participants' personal queries on diet were discussed and clarified accordingly.

Data analysis

The data were analysed using inductive thematic analysis, according to the guidance of Braun and Clarke's Thematic Analysis [29] under the following steps.

1. *Familiarizing with data*: The conversations were audio recorded, transcribed and translated to English by a bilingual expert. The translations were independently checked by two people in the research team. Participants were de-identified during the translation and the initial ideas were noted. Repeated reading of the data sets was done to be familiar with the data before beginning of coding.
2. *Generating initial codes*: The initial list of ideas were noted. Important findings of the interviews were coded across the entire data set.
3. *Searching for themes*: The codes were sorted and collated into potential themes by the principal researcher and an expert in qualitative research. The list of different codes identified across the data set was arranged into potential themes. Tables were used to arrange the codes and to collate and combine different codes to form an overarching theme.
4. *Reviewing the themes*: The themes were checked in relation to the codes extracted from the entire data set. Refinement of the themes were done and some new codes were added with the help of experts analysis.
5. *Defining and naming themes*: The specifics of each theme was discussed and defined. Sub themes were merged into one theme if necessary to prevent overlap and to improve the clarity.
6. *Producing the report*: Report was produced for the final themes developed with the analysis providing sufficient data such as quotes to demonstrate the ideas properly to facilitate understanding by the readers.

This analysis was done manually without using any software. Identification of codes, categorization and the development of final themes were carried out with the consensus of the research team.

Table 2 Socio demographic data of the sample

Socio demographic characteristic	Category	Number	Percentage
Age (years)	20–30	6	20%
	31–40	14	46%
	41–50	9	30%
	51–60	1	4%
Gender	Male	19	63%
	Female	11	37%
Education level	Up to GCE (O/L)*	6	20%
	Up to GCE (A/L)**	10	33%
	Diploma	6	20%
	Graduate/post graduate	8	27%
Occupation	Officer category	3	10%
	Teacher	10	33%
	Clerical category	5	15%
	Work aid/labourer	3	10%
	Driver	2	6.6%
	Farmer	1	3.3%
	Self employed	2	6.6%
	Housewife	4	13%

*GCE (O/L) – General Certificate of Education (Ordinary Level)

**GCE (A/L) – General Certificate of Education (Advanced Level)

Ethical aspects

Ethical clearance for the study was obtained from the Ethics Review Committee, Faculty of Medicine, University of Kelaniya, Sri Lanka (P/23/04/2022). Informed written consent was obtained, allowing the participants the freedom to withdraw from the study at any point during the study implementation without prejudice. All the discussions were conducted at the participants' convenience in a separate room with privacy. The administrative approval was taken from the Regional Director of Health Services, Kegalle and the Medical Officer of Health, Warakapola.

Results

Socio-demographic profile of the participants

A diverse group of participants were recruited from the three selected settings to include males and females from varying socio-economic backgrounds. The first setting, Alpitiya Public Health Midwife area was a rural village ($n = 09$), the second setting was the Divisional Secretariat Office Warakapola ($n = 11$) and the third setting was Tholangamuwa Central College ($n = 10$). An overview of the participant demographics is presented in Table 2.

Perceptions on diet and diet recording

Basic content analysis was used to identify the presence, meanings and the interrelationships of specific words and concepts within the context of focus group discussions, from which codes and themes were systematically derived (Table 3).

The themes were organized into two distinct domains; namely, the perception of diet and dietary behaviour and experience of using the diet diary.

Table 3 Themes and codes of perception on diet and diet recording

Themes	Codes
Conceptualization of a meal [What is a meal?]	Nutritional components Balance of nutrients Effects on health
Knowledge on calories	Meaning of calories How calories affect my health
Determinants of the daily diet	Individual factors Family factors Food factors Special occasions Time factors Socioeconomic factors
Benefits of diet record keeping	Being conscious on meals Being conscious on effects of meals Intentional cut down on meals
Difficulties in diet record keeping	Time constraints Fear of stigma
Expectations of the improvements of the diet diary	Information Appearance Guidance notes Convenience

Domain 1: the perception of diet and dietary behavior

Three themes emerged under the perceptions of diet and dietary behaviour, which included conceptualization of a meal, knowledge on calories and determinants of the daily diet (Table 3).

Theme 1: conceptualization of a meal [what is a meal?]

The codes "nutritional components", "balance of nutrients" and "effects on health" were used to express the theme "What is a meal" (Table 3). The simplest expression of a meal was that it was 'something that satisfies our hunger'. Majority expressed the ideas on a meal as a fundamental requirement for living. Different participants used different terms and words to express this complex idea. The participants with a higher level of education addressed the complex nature of a meal by discussing that it is a 'balanced diet' and that a meal is something that should have a 'nutritional value'. Some participants with a deeper conceptual comprehension elaborated that a meal consisted of 'carbohydrate, starch, fat, protein, vitamin and mineral salts'.

> *"We didn't think that meal is something that gives nutrition to the body in earlier days but now when we become mature, we started to think food is something which is important to our good health and to satisfy our hunger. Then we thought nutritional value should be there in our meals" [Setting 1, participant B].*

When discussing the nutritional value of a meal, a participant who is a house wife and part time worker in a small village restaurant expressed her view on bioavailability of the nutrients and the importance of cooking method in preserving them, elaborating on the practice in relation to cooking green leafy vegetables.

> *"When completely cooked the nutritional components will be destroyed" [Setting 1, participant E].*
> *"When we prepare mallum [a curry made from green leafy vegetables] it should be taken lightly cooked not to destroy the nutritional components" [setting 1, participant E].*

Overall, the participants had a clear idea of the categories of food which contain certain nutrients; e.g. fruits and vegetables as a source of vitamins.

Other than nutritional components and the balance of nutrients, the participants discussed the effect of the meal as one aspect of their perceptions, particularly the effects of an unhealthy diet. They stated that food containing too much fat and oil will lead to illnesses and that they avoid such meals as much as possible, indicating that they understand the meal is related to their health.

Theme 2: knowledge on calories

Two codes; namely "what calorie means to us" and "how calories affect my meal" emerged from the analysis and were used to develop the theme "knowledge on calories" (Table 3).

The code "what calories means to us" was based on the ideas of existence of '*something called calorie*', meaning it as 'energy' and the knowledge of food rich in calories. The participants stated that they have heard of it, while some participants with a higher level of education expressed it as energy. The participants were able to identify the high calorie food categories as sweets, starchy food and foods containing oils and fat.

> *"Something stored in food we need for the energy" [Setting 2, participant E].*
> *"It's different in different foods" [meaning different food items have different amount of calories] [Setting 2, participant G].*

Interestingly, some participants reported that they have never heard of calories.

The participants shared their ideas on applying the knowledge on calories in purchasing food items from the market. Several participants stated that they will be able to identify the caloric content in a certain food if it is mentioned on the packaging, though they might not pay attention to it when purchasing foods. Some participants mentioned that they particularly check these when they purchase food for kids rather than for themselves. One participant who was a school teacher stated that he

is much more attentive on side effects or any unhealthy additives in the food during purchasing than on calories.

Theme 3: the determinants of the daily diet

The participants discussed 'what really determines their diet' and expressed that the factors such as what they like to eat [individual food preferences], taste, whether having an illness or not, physical appearance of the body and what is easy for them to prepare, will influence their decision on what to eat. These ideas were coded as "individual factors" that determine the daily meal, which depend on the person him or herself.

> *"What we like to eat at that moment will be selected, something you think is tasty? Yes" [Setting 2, participant H].*
> *"If we prepare or get a good tasty food, we like eating and try to postpone dieting" [Setting 3, participant E].*
> *"There was a clinic here in December and when I measured my weight there, it was 78 kilograms. Waist was 100 centimetres. From that day onwards I thought I will reduce the amount of rice I eat. I eat only one spoonful of rice now. When I bring the lunch to the office I bring more curries. Earlier I used to eat lot of jackfruit curry [a curry made from tender jackfruit] when I return from work, if it was prepared at home. But now I don't do that. Now my weight has reduced to 66.5 kilograms. Waist is also reduced" [Setting 2, participant E]*
> *"Illness…for example food with starch increase sugar……. and there is cholesterol ……So number one; think of illness" [Setting 3, participant D].*
> *"Sometimes we think what we can cook easily specially in the night. When we prepare dinner [we] try to cook something which we can prepare quickly" [Setting 2, participant E].*

One participant stated that the meal menu depends on children's and husband's preferences. Another participant mentioned that dinner will be more perfectly prepared since all the family members are available to eat together during the night.

> *"Most of the time it's what kids like to eat …or maybe husband likes to eat" [Setting 1, participant F].*
> *"We have to think about what our kids like to eat" [Setting 3, participant B].*
> *"I eat what my mother prepares and gives me" [Setting 2, participant I].*
> *"Sometimes family members prefer rice instead of other food prepared with flour" [Setting 2, participant F]*
> *"We eat less in the noon, but we eat more in the night since we all family members eat together" [Setting 1, participant B].*

Two participants reported that, although they were aware of vitamin content and the health benefits of green leafy vegetables, their regular inclusion in meals was primarily attributed to a long standing family tradition.

> *"Usually from a fruit or green leaves 'mallum' we will get vitamin… therefore we prepare such… but we don't remember it always…. as a tradition we prepare" [Setting 3, participant G].*
> *"No… No.! We prepare 'mallum' as a tradition" [Setting 3, participant F].*

Therefore, "family factors" were also coded as a determinant of the daily diet.

"Food factors" mainly elaborated food safety, quality and availability of the food items as the determinants of the daily meal, with several participants expressing their concern over quality of food they consume. With the increasing usage of agrochemicals and food additives in Sri Lanka, the participants voiced their fear of toxic substances in food items.

> *"When we eat, we find good quality stuff without toxic things…. as much as possible" Setting 1, participant A]*
> *"We usually check for the quality and eat" [Setting 1, participant G]*
> *"When we give something to kids we check quality, whether it is 'desheeya' [locally produced] food items without using chemicals such as preservatives" [Setting 3, participant E].*
> *"A lot of good quality stuff" [Setting 1, participant B].*
> *"What is available and what will get rotten first [we] will prepare first. The vegetables that we can keep for a while will be prepared later" [Setting 1, participant E].*
> *"Sometimes it's what's available at home to prepare" [Setting 1, participant F].*

The food intake also differed according to "special eating occasions" such as parties, weddings, alms giving or dining out. As one participant who was a driver mentioned,

> *"When we drink alcohol [in parties], we take bites [snacks served with alcoholic beverages] with alcohol and that's all; will never take dinner after that". [Setting 1, participant A]*

The "time factors" and the "socio-economic factors" were the other two factors that influenced the decision on what to eat. The participants mentioned that if there is less time for cooking they will select the things they can prepare fast.

> *"What can be prepared easily … with the available time" [Setting 3, participant D].*

The participants also stated that their financial status will determine what they can afford as food in day-to-day life, when buying pre-cooked meals or buying raw material to prepare food at home.

> *"Have to check for money with current situation" [setting 3, participant C].*
> *"Most of the time I check price" [Setting 2, participant F].*

Domain 2: the experience of using the diet diary

Prior to the discussions, the participants were provided with a standard diet diary and were instructed to fill it for seven continuous days to gain experience on diet recording. Their views on diet recording and the experience of filling a standard diet diary were discussed under this domain. Three themes emerged from the discussion; namely, benefits of the diet record keeping, difficulties in diet record keeping and their expectations for improvement of the diet diary.

Theme 4: benefits of diet record keeping

Participants discussed the benefits of record keeping in a diet diary and three codes, "being conscious on meals", "being conscious on effects of meals", and "intentional cut down on meals" were identified from the discussion (Table 3).

The participants expressed that, by having records of the diet, they could check what they eat, assessing, for example, "whether they really need to eat this much". Also diet recording was said to help in assessing the nutritional components included in their meals and identifying the components that are lacking. One participant who was a teacher mentioned that since she has an alternating dietary patterns; healthy and unhealthy, maintaining the diary motivates her to practice a healthier eating behavior. Some participants also stated that, since they started diet recording they were conscious about the amount of food consumed and if their food intake exceeded the expected levels, they could adjust their physical activity level according to the amount they eat. This explains that they were made conscious on the quantity and type of food, as well as not to exceed the daily requirement of the food and healthy eating, by filling the diet dairy.

> *"Sometimes when the doctor asked to write, even if we are used to a different food pattern we tend to get into healthy food habits and may avoid bad food behaviours… it's really worth" [Setting 3, participant G].*
> *"We can find what we are lacking in nutrition" [Setting 1, participant F].*

These ideas were coded as "Being conscious on meals".

The participants also noted the advantage of "being conscious on effects of meals". According to one participant who was a housewife, food and illness had a close association, therefore diet record keeping was perceived as a useful exercise to observe these effects.

> *"I filled it as I thought sometimes we will be able to check our illnesses with this, since our illnesses depend on what we eat" [Setting 1, participant E].*

When some of the participants started recording the meals they had started to control their diet. One participant who was a teacher reported that when she started to maintain the diet diary she remembered that her personal physician has advised her to control her diet since she is overweight. Hence, naturally she started controlling her diet. Similarly, when inquired on the reason for filling the diet diary from the participants who completed it properly, one participant claimed,

> *"I felt when I started writing there will be a control on what I eat, since I have to write what I eat" [Setting 3, participant E].*

These ideas were coded as "intentional cut down on meals".

Theme 5: difficulties in diet record keeping

Under this theme, two codes were identified as "time constraints" and "fear of stigma" (Table 3). The participants explained the difficulty in record keeping due to demands on time. The participants who could not complete the given diet diary have expressed their ideas as,

> *"We didn't have time. We have lot of work. Otherwise we could have filled it" [Setting 1, participant A].*
> *"It is hard to write with the busy schedule" [Setting 3, participant H].*

One participant, who is working as a clerk expressed his idea as,

> *"People who have low economic status might not be having regular meals, but might not like to tell that*

they have not eaten. So they might not fill the diary" [Setting 2, participant F].

Theme 6: expectations of the improvements of the diary

The codes "information needs", "appearance", "guidance notes" and "convenience" were combined to develop the theme "Expectations of the improvements of the diary" (Table 3). The participants expressed their ideas relating more to the user-friendliness rather than the cultural adaptation of the diary and perceived it as a potential tool for nutrition education.

With the experience of filling the diet diary, there were many suggestions on including the nutritional information such as the balanced diet, nutritional value of food and diseases that are related to the diet. One respondent holding an officer grade position stated that,

"The importance of a meal, what is a balanced diet, people might not be knowing how to prepare a balanced diet easily. If we can provide suggestions on that including information on food, it would be better" [Setting 2, participant H].

A participant stated that it would be nice to include the information on adjusting diet according to activity level.

"If someone works hard (physical) they have to eat more. But if a person doesn't work hard [he/she] need not eat a lot....I think it would be nice if you have mentioned that in the booklet" [Setting 3, participant E].

Another main concern was that a diet recording tool should be more attractive in appearance.

"If you design it attractively just like baby's clinic card printed in a nicer way...." [Setting 2, participant C].

The participants explained the importance of having guidance notes on how to fill the diet dairy and displaying the portion sizes of commonly consumed food including cultural food items. Some participants preferred to have a list of food items to tick, that would facilitate time management and also help people with low literacy.

"There are no instructions given" [Setting 3, participant I].
"Since we have a higher educational level we tend to do these kind of things. We think this is a must-do. But when doctors give this to general public [patients] they may miss this ... since there is a lot to fill. If there was a list to tick, would have been better and easy. If we eat rice we can mark it....something like that..." [Setting 2, participant C].

Summary

Participants expressed the idea that meals are essential for living and that food contain specific nutrients necessary for health. While most participants expressed their awareness of calories, only a few had a clear understanding of its meaning as a unit of energy. Various factors that determine a person's diet were identified. The participants' ideas and expectations on a user friendly, interesting diet diary highlighted including information on a balanced diet, nutritional value of food and the diseases related to diet, improving the appearance, including guidance notes and convenient food lists to choose from. The participants expressed that the diet diary can be used to track one's illnesses, assess the nutritional quality of a meal and control diet. When discussing the difficulties faced during filling the diet diary, the time constraints were stressed as the main challenge of diet record keeping, while underreporting due to poor diet quality was perceived as another limitation.

Discussion

This qualitative exploration of the perception of diet and diet recording was done among 30 males and females diverse in age, education and socioeconomic level, using focus group discussions. Six themes were identified as perceptions on diet and diet recording, which included "what is a meal?", "knowledge on calories", "determinants of the daily diet", "benefits of diet record keeping", "difficulties in diet record keeping" and "expectations of the improvement of the diet diary".

Understanding the dietary patterns, behavior, perceptions and the determinants of diet

The key findings include having the idea of diet as a collection of food with different nutritional values, which consists of carbohydrates, proteins, lipids, minerals and vitamins with a balance between these nutrients. The determinants of an individual's diet was related to the individual person as well as the surrounding environment such as the family, economy and time. It was an alarming finding that the participants demonstrated limited knowledge and were not concerned about calories, despite Sri Lanka being one of the countries with high literacy in South Asia [30].

In recording diet, the time constraints and the economic status were reported as the barriers for accurate recording and participants identified being conscious and mindful of the meals, being conscious on effects of meals and intentional cut down of the meal as the beneficial aspects of recording their own diet, consistent with the previous study findings [31, 32].

In literature, the concept of diet is related with nutrition and human health [1]. A nutritionally well balanced diet or a collection of food with good nutritional value was identified as crucial for a healthy life [2]. Therefore, the concept of healthy diet was defined in relation to diseases and was correlated to the negative health outcomes and lack of wellbeing. Similarly, in the current study the concept of a meal was described with nutrition related ideas and the notions related to the connection between health and diet. Further, the balanced diet was elaborated as consisting of carbohydrate, starch, fat, protein, vitamin and minerals, whereas in the literature it is defined that the key properties of healthy diet is ensuring sufficient intake of micronutrients, macronutrients and energy to meet the requirement without excess, maintaining appropriate balance of macronutrients carbohydrates, proteins and fats [2, 3]. In current study participants have demonstrated furthermore, the ideas on cooking methods to preserve the nutritional value of the meals.

The ideas on calories were expressed merely as knowing the word and that it is related to energy, in keeping with the existing literature. A study done by Wongprawmas et al. among Italian consumers revealed that the majority of the participants were uncertain about the statement 'A healthy diet is based on calorie count' [17]. The knowledge on calorie was not correlated with the food choices [20]. Similarly in this study, the participants stated that even if the amount of calories is stated in packaging they might not consider it when purchasing the food. This proves that the idea of calories need to be emphasized more in nutrition education, in addition to the nutritional quality of the food items. Moreover, in a backdrop of rapidly rising rates of overweight and obesity among the Sri Lankan population [33, 34], this finding highlights the need for enhanced awareness on diet monitoring, particularly in relation to dietary energy intake.

The factors that determine the diet were similar to the factors reported in literature [16, 18–20], however, one participant remarkably stated how her body weight and the waist size altered her dietary behavior in a healthy manner, aiming to reduce both weight and waist size. In the literature, it is mentioned that the physiological and psychological influences such as being overweight or obese incline towards a greater liking for high energy density food [19]. This shows that in this sample, the body image plays a major role as a dietary determinant than the physiological or psychological influence, shifting the dietary behavior towards the healthy behaviours related to weight management.

This study highlights culturally embedded perceptions where food choices and meal preparation practices were observed to be family oriented, with mothers considering the dietary preferences of their husbands and children, while children generally accepting and consuming the meals prepared by their mothers. And the food choices in meal preparation was also determined by their traditional practices. With these being a strong factor, other factors such as individual preferences, food factors, socio economic factors were also related similar to previous literature [16, 18–20].

The findings in this study indicate that food choices in Sri Lanka, particularly in rural and semi urban communities, continue to prioritize culturally rooted, locally produced food items ('desheeya'), which are perceived as high quality and preferred for children's diets. Although food selection in other countries is influenced by packaging and nutritional information presented on product labels [17, 18], this did not emerge as a strong influence on food choices in the present study.

The influence of the traditional Ayurvedic classification of food into 'hot' and 'cold' categories appear to be replaced by contemporary health concerns such as weight gain and risk of non-communicable diseases, reflecting a shift similar to the trends seen in other countries [4, 21, 22]. In the present study, the participants was having the ideas of consuming non-toxic and locally produced "deshiya" food items, and it could be due to increased usage of food preservatives [35] as well as the increased usage of agrochemicals and associated emerging diseases among the Sri Lankan population [36].

Though the food waste and food labeling did not emerge as dietary determinants in this study as mentioned in previous literature [17], the family factors exerted more weightage on food choices, demonstrating the cultural value of the family as a unit which influences a person's dietary choices.

In this study special occasions were a determinant of the diet and the relationship between the diet and alcohol intake was discussed. Similarly, the existing literature shows a link between alcohol and food choices [18]. However, the participant in this study stated that eating snacks with alcohol leads to avoiding the main meal, while in literature it was stated that alcohol and food are linked with palatability. Though it was mediated through different mechanisms, the present study confirms that alcohol also affects the dietary behavior of people, particularly in a cultural context where alcoholic beverages are not regularly incorporated into meals.

The experience of filling a standard diet diary

The benefits and barriers of diet recording elaborated in this study are similar to those mentioned in the literature [31, 37], however, the participants in this study had more positive ideas on the benefits of record keeping such as being mindful of what they eat and intentional cut down of the diet as needed according to their medical condition or to maintain a healthy lifestyle (e.g. healthy body weight). Considering the utility of diet diaries as a means

of dietary goal setting and self-monitoring [38], the findings show a promising opportunity.

Both in literature and in the present study findings, the participants discussed the fear of stigma of diet recording, while in the literature it was identified as the unwillingness to show others the diet records [31]. The present study participants indicated the potential for reluctance of recording the things they eat, revealing a poor diet quality due to low socio-economic status. Though the reluctance of reporting was highlighted as a barrier, the participants did not attempt to change their food choices or include false information in the diet diary to provide 'socially desirable' responses. Similarly, although the time constraints were identified as a potential challenge in maintaining the diet diary, it did not appear to change their dietary behaviour. Conversely, according to literature, measures such as limiting the food choices, eating less and selecting instant or packed food have been adopted to ease the recording procedure [37]. This exerts a negative impact on the data quality of diet recording, though the participants of the present study had no intention of changing their dietary behavior based on social desirability or easier reporting, indicating a positive mindset.

The participants in this study expected to have information related to healthy diet, to improve the appearance, to have clear guidance notes with information on portion sizes and tick boxes for the low literacy population, where in literature the participants has requested more space and customization according to individual preferences [27].

Strengths and limitations

The present study was a preliminary step in the development of a diet recording tool that is relevant to the local context, for the future use in the management of diet-related non-communicable diseases and their complications. Therefore, this co-design approach was very useful to get the end users' active participation, to ensure the tool meets their needs and the preferences. This collaborative method helped to create a user friendly, culturally relevant, and practical diary that encourage accurate and consistent diet recording.

Another strength of this study is the sampling procedure which allowed the inclusion of a diverse group of male and female adults representing different ages, educational and socio-economic levels to ensure the richness of the information elicited. However, cultural diversity of the sample could not be achieved since the sample was limited only to the Sinhalese, which was a major limitation of the study. In future studies, it would be beneficial to assess the perception on diet and diet recording in Tamil and Muslim communities to elicit more comprehensive and culturally-specific information.

Conclusion

The present study revealed public perceptions on diet and diet recording under six main themes. The findings reveal a sound general awareness of diet and positive ideas on diet recording despite an inadequate understanding of calories. The public should be empowered with the knowledge on calories and how to use the knowledge on calories and nutritive values for the selection of healthier food items and preparation of healthy meals.

The study confirmed that the diet recording can promote self-regulation of eating behaviors among the Sri Lankan population, as participants identified increased awareness of the effects of the meals on health and intentional cut down of the amount consumed as a key benefit of maintaining a diet diary. The finding will be valuable in planning evidence-based interventions for developing self-control on diet, particularly among the general population.

The findings of this study can be used to design culturally appropriate tools for comprehensive dietary data collection, addressing the public expectations to ensure better compliance. Further research in multicultural settings would be beneficial to evaluate the cultural influences on the perceptions of diet.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-025-25295-3.

Supplementary Material 1.

Acknowledgements

Regional Director of Health Services and the staff, RDHS Office, Kegalle, Medical officer of Health and the staff, Warakapola MOH, Divisional secretary and the staff, Divisional Secretariat Office, Warakapola, The Principal and the staff, Tholagamuwa Central Collage, Warakapola.

Authors' contributions

Rajakaruna VPC was responsible for the conceptualization and design of the research project, data collection and curation, content analysis, interpretation and manuscript writing. Athuda LK provided guidance and participated in content analysis. Chandana GJ provided the technical guidance. Wijesinghe CJ and Kasturiratne A supervised the research project. All authors read and approved the manuscript.

Funding

The study was self-funded by the corresponding author.

Data availability

The transcriptions and the translations used for the manual content analysis during the current study are available on reasonable request in the following link.(https:/drive.google.com/drive/folders/1eJS3g-ahE7u_cWl5qNTadalJNdrzxnF6?usp=sharing).

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 (District Secretariat Kegalle District, Regional Director

of Health Services-Kegalle District, Medical Officer of Health, Warakapola). 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.

Competing interests
The authors declare no competing interests.

Received: 14 May 2025 / Accepted: 14 October 2025
Published online: 26 November 2025

References

1. Cicero AFG, Fogacci F, Borghi C. An evolving definition of a healthy diet. Nutrients. 2023;15(9):2–4.
2. World Health Organization (WHO). Guidance for monitoring healthy diets globally. Available from: https://www.who.int/publications/i/item/9789240094383
3. Cena H, Calder PC. Defining a healthy diet: evidence for the role of contemporary dietary patterns in health and disease. Nutrients. 2020;12(2):1–15.
4. Hatherall D. Global strategy on Diet, physical activity and health. WHO. 2004;2002(May):314–23.
5. Ministry of Women and Child Development G of I. Nutrition transition in India 1947–2007. 2007;5:131–46. Available from: http://wcd.nic.in/research/nti1947/NTI1947CONTENT.htm
6. No Title. p. https://www.who.int/southeastasia/health-topics/nu
7. Bishwajit G. Nutrition transition in South Asia: the emergence of non-communicable chronic diseases. F1000Research. 2015;4:8. https://doi.org/10.12688/f1000research.5732.1.
8. Weerasekara PC, Withanachchi CR, Ginigaddara GAS, Ploeger A. Nutrition transition and traditional food cultural changes in Sri Lanka during colonization and post-colonization. Foods. 2018;7(7):1–18.
9. Jayawardena R, Thennakoon S, Byrne N, Soares M, Katulanda P, Hills A. Energy and nutrient intakes among Sri Lankan adults. Int Arch Med. 2014;7(1):1–11.
10. Jayawardena R, Byrne NM, Soares MJ, Katulanda P, Hills AP. Validity of a food frequency questionnaire to assess nutritional intake among Sri Lankan adults. Springerplus. 2016;5(1):1–6.
11. Jayawardena R, Byrne NM, Soares MJ, Katulanda P, Hills AP. Food consumption of Sri Lankan adults: an appraisal of serving characteristics. Public Health Nutr. 2013;16(4):653–8.
12. Ministry of Health. Food Based Dietary Guidelines for Sri Lankans Practitioner's Handbook. 2021. 25–36 p.
13. England Public Health. 2016. From Plate to Guide: What, why and how for the eatwell model About Public Health England. PHE Publ Gatew. 2016;1–37. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/579388/eatwell_model_guide_report.pdf
14. Rippe JM. Dietary Guidelines for Americans 2020–2025. Lifestyle Nutrition. 2024:90–100. https://doi.org/10.1201/9781003452607-8.
15. Life E. Exploring the meal concept – an interdisciplinary literature overview. 2015(12). https://researchportal.hkr.se/en/publications/exploring-the-meal-concept-an-interdisciplinary-literature-overvi-2/
16. 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. 2022;32:100615. Available from: https://doi.org/10.1016/j.gfs.2022.100615
17. 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). https://doi.org/10.3390/foods10020318.
18. 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.
19. Mela DJ. Determinants of food choice: relationships with obesity and weight control. Obes Res. 2001;9(Suppl 4):November.
20. Koch F, Hoffmann I, Claupein E. Types of nutrition Knowledge, their Socio-Demographic determinants and their association with food consumption: results of the NEMONIT study. Front Nutr. 2021;8(February):1–11.
21. Nichter M. Cultural dimensions of hot, cold and Sema in sinhalese health culture. Soc Sci Med. 1987;25(4):377–87.
22. Wandel M, Gunawardena P, Oshaug A, Wandel N. Heaty and cooling foods in relation to food habits in a Southern Sri Lanka community. Ecol Food Nutr. 1984;14(2):93–104.
23. Ministry Of Buddhasasana R and CA. Sri Lankan Ayurvedic food guidelines. 2024. https://ayurveda.gov.lk/food-handbook/
24. Godevithana J, Wijesinghe CJ, Wijesinghe MSD. Prevalence and determinants of healthy and balanced diet among office workers in a sedentary working environment: evidence from Southern Sri Lanka. BMC Public Health. 2024. https://doi.org/10.1186/s12889-024-20935-6.
25. Parackal S, Akhtar SS, Yadav S, Brown R. Using co-design to identify intervention components to address unhealthy dietary and activity behaviours in New Zealand South Asians. J Nutr Sci. 2024;13(2):1–9.
26. Reddy G, Dam RM, Van. Food, culture, and identity in multicultural societies : Insights from Singapore. Appetite. 2020;149(September 2019):104633. Available from: https://doi.org/10.1016/j.appet.2020.104633
27. Marshall AP, Tobiano G, Roberts S, Isenring E, Sanmugarajah J, Kiefer D, et al. End-user perceptions of a patient-and family-centred intervention to improve nutrition intake among oncology patients: A descriptive qualitative analysis. BMC Nutr. 2020;6(1):1–14.
28. Kasturiratne A, Khawaja KI, Ahmad S, Siddiqui S, Shahzad K, Athauda LK, et al. The iHealth-T2D study, prevention of type 2 diabetes amongst South Asians with central obesity and prediabetes: study protocol for a randomised controlled trial. Trials. 2021;22(1):1–13.
29. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101.
30. south-asia-highest. -literacy-rate @ gospelforasia.org. Available from: https://gospelforasia.org/functional-illiteracy/south-asia-highest-literacy-rate
31. Daniel E, Shumer NJ, Nokoff NPS, Erin C, Dowd MDa, Frank MJ, Collins PDbA, Goldd PDcJM, Deanna M, Barch PD. Barriers and negative nudges: exploring challenges in food journaling HHS public access. Physiol Behav. 2017;176(12):139–48.
32. Epstein DA, Cordeiro F, Fogarty J, Hsieh G, Munson SA. Crumbs: Lightweight Daily Food Challenges to Promote Engagement and Mindfulness. 2016.
33. Ministry of Health Nutrition and Indigenous. Annual Health Bulletin 2015 Sri Lanka. Medical Statistics Unit Ministry of Health, Nutrition and Indigenous Medicine. 2017. Available from: http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/2017/AHB2015.pdf.
34. Health M. of. Annual Health Bulletin. 2023.
35. Karunarathne K. Levels of benzoic and sorbic acid preservatives in commercially produced ready to serve products in Sri Lanka. Acta Scientific Pharmaceutical Sciences. 2019;3(8):02–7.
36. Valcke M, Levasseur ME, Soares Da Silva A, Wesseling C. Pesticide exposures and chronic kidney disease of unknown etiology: an epidemiologic review. Environ Heal Glob Access Sci Source. 2017;16(1). https://doi.org/10.1186/s12940-017-0254-0.
37. 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.
38. Wadolowska L. Utility of a qualitative, dietary 'self-monitor your diet®' diary to improve det quality and compliance with dietary recommendations. 2024;266. https://doi.org/10.3390/proceedings2023091266.

Publisher's Note