International Journal of Ayurveda and Pharma Research

Research Article

CONTENT VALIDATION OF A SEMI-STRUCTURED QUESTIONNAIRE TO ASSESS DIETARY BEHAVIOUR AND PATIENT-REPORTED OUTCOMES IN PSORIASIS

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Article info

Article History:
Received: 11-09-2026
Accepted: 14-10-2026
Published: 17-11-2026

KEYWORDS:
Psoriasis, Dietary behaviour, Questionnaire Development, Content validation, Patient-Reported Outcomes.

ABSTRACT

Dietary behaviour, encompassing food choices, eating habits and intake patterns, is increasingly recognized as a modifiable factor influencing disease activity and patient-reported outcomes in psoriasis. Although there are several standardized instruments existing for dietary assessment, most remain generic and do not capture the disease specific and culturally embedded eating practices of psoriasis patients, particularly within the Indian setting. A culturally contextualized tool was therefore considered necessary. **Objective:** To develop and establish the face and content validity of a semi-structured dietary behaviour questionnaire assessing dietary patterns and patient-reported skin responses in psoriasis. **Materials and Methods:** An extensive review of biomedical and Ayurvedic literature guided the construction of a two-part questionnaire covering (1) dietary behaviour across physiological, nutritional and socio-cultural dimensions, and (2) patient-reported skin response on a four-point Likert scale. The instrument was translated, back-translated, peer-reviewed, and content-validated by ten subject experts who rated each item for clarity, sufficiency and relevance. The Content Validity Index (CVI) was computed at item and scale levels, and the questionnaire was revised accordingly. **Results:** The validated questionnaire comprised 26 items on physiological dimensions of food intake, a 14-category food frequency questionnaire (FFQ) covering nature, quality and quantity of food consumed, 25 items on socio-cultural aspects of eating and a 5 -item Likert based patient-reported outcome section (itching, redness, thickness, scaling, and sleep disturbance). Item level CVI ranged from 0.81 to 1.00, and the overall Scale-CVI was 0.92. **Conclusion:** The questionnaire demonstrates sound face and content validity and offers a culturally relevant instrument for evaluating dietary practices and perceived symptom change in psoriasis, suitable for both clinical and research use.

INTRODUCTION

The concept of dietary behaviour extends beyond simple nutrient intake and encompasses physiological responses to food, the nature and quantity of foods consumed, as well as socio-cultural practices associated with eating. According to behavioural nutrition frameworks dietary behaviour includes physiological dimensions of food intake, food selection patterns, preparation methods, meal timing, and cultural influences affecting food consumption. [1-4]

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Quick Response Code

https://doi.org/10.47070/ijapr.v14i10.4390

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This is comparable to the classical ayurvedic description of dietary guidelines such as *Ahara vidhi vidhana* and *Astahara-vidhi-visesa-ayatana*, which emphasize the method, timing, food patterns and compatibility of food consumption. Improper dietary practices, incompatible food combinations *(Viruddha ahara)*, and irregular eating habits are described as important etiological factors for various diseases, including *Kushta* (skin disorders). [5-8]

Certain types of *Kushta* described in Ayurvedic literature, such as *Eka kushta*, *Kitibha kushta*, and *Charmadala kushta* shares clinical similarities with psoriasis. Psoriasis is a chronic inflammatory skin disease characterised by erythematous plaques, scaling and thickened skin lesions resulting from dysregulated immune responses. [9,10] The condition is multi factorial in origin, involving genetic

susceptibility, environmental triggers, metabolic abnormalities, and lifestyle factors.[11] Dietary habits is a potential modifiable factor influencing both disease severity and patient quality of life, and hence understanding the dietary patterns and eating behaviours of individuals with psoriasis can aid in its modification and improved disease management strategies.[12-14]

Although several studies have explored the relationship between diet and psoriasis, there is a lack of standardised tools specifically designed to assess dietary behaviour among psoriasis patients in the Indian context. Existing dietary assessment tools primarily quantify nutrient intake and do not adequately capture behavioural and socio-cultural aspects of food consumption. Therefore, the development of a culturally contextualized questionnaire is necessary to systematically evaluate dietary practices and their perceived influence on psoriasis symptoms.

AIM

To develop and establish the face and content validity of a semi-structured questionnaire to assess dietary behaviour and patient-reported outcomes in psoriasis.

OBJECTIVES

1. To identify domains of dietary behaviour relevant to psoriasis from biomedical and Ayurvedic literature.
2. To develop a semi-structured questionnaire covering physiological, nutritional and socio-cultural dimensions.
3. To assess face validity through peer and expert review.
4. To evaluate content validity through expert ratings and CVI calculation.

MATERIALS AND METHODS

Study Design

This study involved the development and validation of a semi-structured questionnaire for assessing dietary behaviour and patient-reported outcomes in psoriasis. As the first step towards this a thorough literary search was done on these areas:

1. Biomedical literature on diet, psoriasis and *Kushta*.
2. Behavioural nutrition frameworks
3. Likert scale for assessing patient reported outcomes for psoriasis.

This was done to ensure comprehensive assessment beyond simple nutrient quantification. The literature search yielded 8 key areas which could be included under the 3 domains of dietary behaviour.

Table 1: Domains of dietary behaviour and the corresponding 8 key areas

Dietary Behaviour Domain	Key Areas
Physiological dimensions of food intake	• Hunger and satiety patterns • Digestive symptoms • Meal timing and circadian influences
Nature, quality, variety, and quantity of food	• Food frequency patterns • Food combinations
Socio-cultural aspects of food intake	• Behavioural context • Psychological influences • Cultural dietary patterns

Development of the questionnaire

The initial draft was organized into two parts. Part I addressed dietary behaviour and was divided into three sections.

Section A- Physiological dimensions of food intake: This section covered the number of meals per day, regularity of hunger, appetite changes, meal timing, satiety perception, tendency to eat beyond fullness, emotional eating, thirst and water intake, digestive discomfort, bowel habits, and post- meal practices. Responses were recorded on a four- point frequency scale (Always/Often/Rarely/Nil).

Section B – Nature, quality, variety and quantity of food: A detailed Food Frequency Questionnaire (FFQ) was constructed across 13 categories– cereals and cereal-based preparations, dairy products and fats, vegetables and tubers, pulses and legumes, meat and alternatives, fats and oils, spices, sweets and baked goods, beverages, fruits, seeds and nuts, miscellaneous foods, and food combinations– each rated on a five-point frequency scale ranging from never/less than once a month to twice or more daily. Separate columns recorded intake before and after dietary modification, allowing an internal comparison.

Section C– Socio-cultural aspects of food intake: This section captured meal timing regularity, eating environment, emotional triggers, cultural and habitual eating patterns, and food combinations.

Part II – Patient-reported outcomes: Perceived skin symptoms– itching, redness, thickness, scaling and sleep disturbance – were rated on the same four–point scale (Always/Often/Rarely/Nil).

Translation and Back- Translation: The questionnaire was translated into Malayalam language for contextual clarity, and an independent expert back-

translated it into English to confirm semantic equivalence. Discrepancies identified during this process were resolved to preserve conceptual consistency across versions.

Face validity

Face validity was established by peer review with postgraduate scholars and expert review by faculty from relevant departments, who evaluated each item for clarity, wording and comprehensibility.

Content Validation

Ten subject experts independently rated every item on three parameters– clarity, sufficiency and relevance– using a four-point scale: A (excellent/very relevant), B (minor correction needed), C (major correction needed), and D (not clear/not relevant). Experts recommended simplifying technical terminology, adding further food items, clarifying descriptions of digestive symptoms, and refining frequency categories. All accepted suggestions were incorporated into the final version.

CVI Calculation

The Content Validity Index (CVI) was used to quantify expert agreement. Item-level CVI (I- CVI) was calculated as the proportion of experts rating an item 3 or 4, and Scale-level CVI (S- CVI) as the mean of all I-CVI values. An I-CVI of 0.78 or above was taken as the threshold for acceptability.

RESULTS

The final validated questionnaire comprised four components designed to assess dietary behaviour and patient-reported outcomes among individuals with psoriasis. The first component consisted of 26 items addressing the physiological dimensions of food intake, including hunger and satiety, meal timing, digestion, and other physiological aspects of eating.

The second component comprised a 14-category Food Frequency Questionnaire (FFQ), designed to assess the nature, quality, variety, and quantity of food consumed, including relevant food combinations. The third component included 25 items addressing the socio-cultural aspects of food intake, encompassing dietary practices and the influence of cultural and traditional factors on eating behaviour. The fourth component consisted of five Likert-scale items assessing patient-reported outcomes related to psoriasis, including itching, redness, skin thickness, scaling, and sleep disturbance.

Content validation was undertaken by a panel of ten subject experts who evaluated the questionnaire items for clarity, sufficiency, and relevance. Based on their assessments, modifications were incorporated to improve the comprehensibility and content coverage of the instrument. These modifications included simplifying ambiguous medical terminology, refining question wording, standardising response-frequency descriptions, and incorporating additional regionally relevant food items.

The content-validity indices were calculated separately for clarity, sufficiency, and relevance using the Scale-Level Content Validity Index based on the average method (S-CVI/Ave) and the universal agreement method (S-CVI/UA).

For clarity, the physiological domain demonstrated an S-CVI/Ave of 0.980 and an S-CVI/UA of 0.846. The FFQ achieved values of 1.000 for both indices, while the socio-cultural domain recorded an S-CVI/Ave of 0.984 and an S-CVI/UA of 0.923. The Likert-scale section achieved 1.000 for both indices, indicating complete expert agreement for the assessed items.

Table 2: S-CVI/Ave and S-CVI/UA for Clarity

Questionnaire domain	S-CVI/Ave	S-CVI/UA
Physiological dimensions of food intake	0.980	0.846
Food Frequency Questionnaire (FFQ)	1.000	1.000
Socio-cultural aspects of food intake	0.984	0.923
Likert scale	1.000	1.000

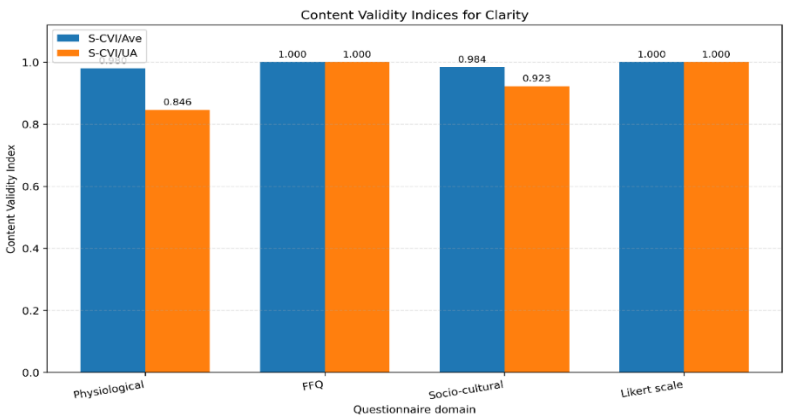


Figure 1: Domain-wise Content Validity Index for Clarity of the Questionnaire

For sufficiency, the physiological domain recorded an S-CVI/Ave of 0.980 and an S-CVI/UA of 0.846. Both indices were 1.000 for the FFQ and socio-cultural domains, as well as for the Likert-scale section. These findings indicate complete agreement among the experts regarding the sufficiency of the items in these three components, according to the reported calculations.

Table 3: S-CVI/Ave and S-CVI/UA for Sufficiency

Questionnaire domain	S-CVI/Ave	S-CVI/UA
Physiological dimensions of food intake	0.980	0.846
Food Frequency Questionnaire (FFQ)	1.000	1.000
Socio-cultural aspects of food intake	1.000	1.000
Likert scale	1.000	1.000

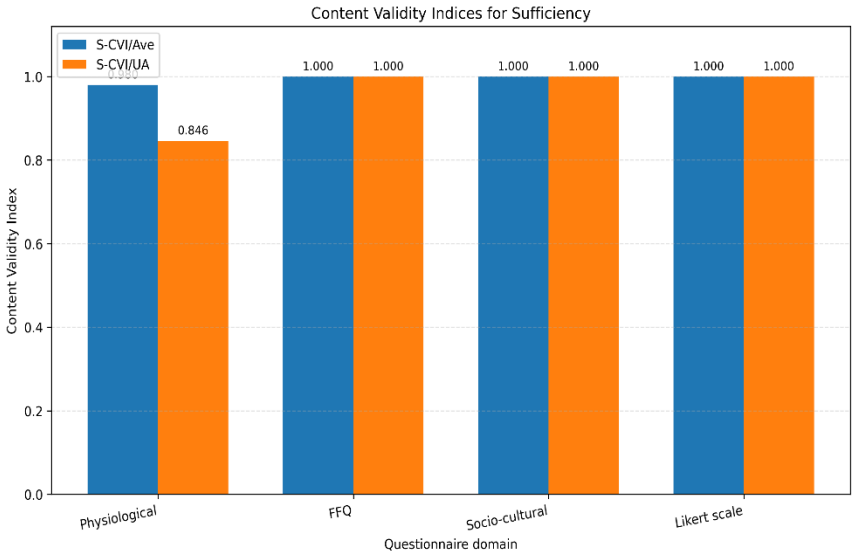


Figure 2: Domain-wise Content Validity Index for Sufficiency of the Questionnaire

For relevance, the physiological domain demonstrated an S-CVI/Ave of 0.961 and an S-CVI/UA of 0.807. The FFQ and Likert-scale sections achieved values of 1.000 for both indices. The socio-cultural domain recorded an S-CVI/Ave of 0.961 and an S-CVI/UA of 0.846. These findings indicate high average expert agreement regarding item relevance, although universal agreement varied across the domains.

Table 4: S-CVI/Ave and S-CVI/UA for Relevance

Questionnaire domain	S-CVI/Ave	S-CVI/UA
Physiological dimensions of food intake	0.961	0.807
Food Frequency Questionnaire (FFQ)	1.000	1.000
Socio-cultural aspects of food intake	0.961	0.846
Likert scale	1.000	1.000

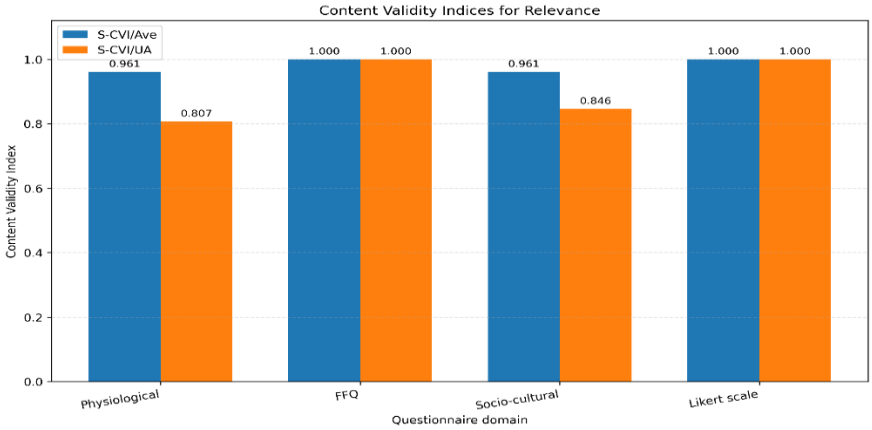


Figure 3: Domain-wise Content Validity Index for Relevance of the Questionnaire

Table 5: Content validity results

Domain	Number of items	I-CVI Range
Physiological dimensions	26	0.80-1.00
Socio- cultural dimensions	25	0.82-1.00
Patient reported outcomes	5	0.90-1.00

Overall, the content-validity indices demonstrated substantial expert agreement regarding the clarity, sufficiency, and relevance of the questionnaire items. The instrument integrates physiological, dietary, and socio-cultural dimensions of food intake with patient-reported psoriasis symptoms, providing a structured approach to assessing dietary behaviour and perceived skin outcomes. Based on the face and content validation findings, the instrument demonstrated satisfactory validity and was considered suitable for administration in clinical settings.

DISCUSSION

Dietary behaviour is now widely recognised as a modifiable factor in the clinical course of psoriasis, a disease increasingly viewed as systemic rather than purely cutaneous, with links to metabolic dysregulation and immune imbalance. This study set out to refine dietary assessment so that it better reflects the eating behaviours relevant to psoriasis, with particular attention to appetite, meal timing, gastrointestinal response and culturally specific practice.

One notable addition was a set of appetite–related items, including perceived changes in appetite linked to psoriasis symptoms and the regularity of hunger cues. This reflects evidence that inflammatory cytokines implicated in psoriasis, such as TNF-α and IL-6, can influence appetite regulation and energy balance. Tracking hunger regularity and appetite fluctuation may therefore offer an indirect window into systematic inflammatory activity.

Meal- timing items were also refined, with structured recording of breakfast, lunch and dinner timing and provision for other eating occasions. This is consistent with the growing field of chrononutrition, where irregular meal timing has been linked to disrupted circadian rhythm and, in turn, to heightened inflammatory and metabolic disturbance. Capturing individual meal-timing patterns allows the tool to examine these temporal dietary behaviours alongside disease expression.

A few items were removed to improve feasibility: early satiety (originally Q4), for instance, was dropped as redundant, prioritising constructs more directly tied to psoriasis-related metabolic and inflammatory processes. Items on thirst and digestive discomfort were sharpened to focus on specific symptoms such as bloating, acidity, gas and indigestion, given the accumulating evidence linking gastrointestinal symptoms to psoriasis through the gut-skin axis, where changes in gut microbiota and intestinal permeability may drive systemic inflammation.

Bowel habits, particularly stool frequency were included as a further marker of gut function, and post digestive symptoms such as belching were added for greater granularity in capturing digestive disturbance.

The FFQ itself was substantially strengthened. Culturally specific items– pazhamkanji, region-specific oils such as palm, gingelly and mustard oil, and commonly consumed processed foods including pizza, burgers, pastries and white bread– improve the ecological validity of the tool for an Indian population. The addition of beverages (herbal tea, coffee or tea with and without sugar, energy drinks) and nutrient dense foods (berries, lemon, soybean, kale) allows a fuller picture of dietary patterns that may bear on inflammation. Less relevant items, such as freshly harvested grains, were dropped, while potion-size specification (using standard cup measures) and provision for late-night snacking were added to improve both clarity and sensitivity to circadian-related eating behaviour.

Taken together, these revisions represent an attempt to build a more sensitive, context – specific instrument for dietary assessment in psoriasis, one that draws on physiological, behavioural and cultural dimensions of eating to capture the multifactorial relationship between diet and disease severity.

It should nonetheless be noted that association is not causation: questionnaire-based assessment alone cannot establish a causal link between dietary behaviour and inflammatory activity. Longitudinal studies incorporating biomarkers and controlled dietary interventions would be needed to clarify these relationships further.

CONCLUSION

The study developed and established the face and content validity of a semi- structured questionnaire assessing dietary behaviour and patient reported outcomes in psoriasis. Spanning physiological aspects of food intake (26 items), food-frequency patterns (14 categories) and socio-cultural dietary practices (25 items), the instrument extends beyond conventional nutrient based tools to capture a fuller picture of eating behaviour. By integrating modern

nutritional concepts with classical Ayurvedic dietary principles, it gains particular relevance for use in the Indian context, while its patient-reported symptom section adds further value in linking dietary practice to perceived disease manifestation. The validated questionnaire may support both clinical and research efforts to understand the role of diet in psoriasis and to guide individualised dietary intervention.

Strength of the study

The integration of modern nutritional frameworks with classical ayurvedic dietary principles, together with the inclusion of region–specific food items, lends the questionnaire particular cultural relevance for the Indian population.

Limitations: Only face and content validity were assessed in this phase; construct validity and reliability testing were not undertaken. Larger patient populations will be required to establish the reliability, internal consistency and criterion validity of the instrument.

Future scope

Future studies need to assess the reliability and construct validity of the questionnaire in bigger cohorts of patients with psoriasis. The tool could also be adapted for longitudinal studies to examine the effect of dietary interventions on outcomes in psoriasis.

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Cite this article as:
Pavithra S, Sowmya K S. Content Validation of A Semi-Structured Questionnaire to Assess Dietary Behaviour and Patient-Reported Outcomes in Psoriasis. International Journal of Ayurveda and Pharma Research. 2026;14(10):113-139.
https://doi.org/10.47070/ijapr.v14i10.4390
Source of support: Nil, Conflict of interest: None Declared

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Annexure

Dietary Behaviours Questionnaire

Dietary behaviour for the past 1 year before making dietary changes and after making dietary changes is assessed through 2 separate columns-Before making modifications and after making modifications. Patients who have made dietary modifications for 1 month or more are required to fill out the second column. If no modifications have been made, that can be left blank.

Name: -------

Age: ---------

Sex: ---------

Locality: Urban/Rural/ Costal

Physiological Dimensions of Food Intake

Guiding table for frequency observation

Frequency of intake	**Assessment**
4 or 5 days or more in a week	Always
2 or 3 days in a week	Often
1 day / 1 or 2 meal times in a week / A few times on weekend	Rarely
Never following	Nil

Before Making Modifications	**After Making Modifications**
How many meals do you consume per day? ☐ 1 ☐ 2 ☐ 3 ☐ >3	☐ 1 ☐ 2 ☐ 3 ☐ >3
2. Do you feel hungry at regular intervals every day? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
3. What are your usual meal timings? Breakfast__ Lunch _____ Dinner_____ Other _____	Breakfast _____ Lunch_____ Dinner_____ Other_____
4. How often do you feel hungry after physical activity?	Always / Often/ Rarely/ Nil
Always / Often/ Rarely/ Nil	
5. Do you feel more hungry at a particular time of day?	☐ Morning ☐ Afternoon ☐ Evening No specific time
6. Do you take food not considering the state of hunger? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
7. Do you tend to ignore your hunger state?	Always / Often/ Rarely/ Nil
8. Even in extreme hunger state do you prefer to take light meals? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
9. How often do you feel thirsty? **Always / Often/ Rarely/ Nil**	**Always / Often/ Rarely/ Nil**
10.How many glasses of water do you drink every day? (include plain water only not tea, coffee or juices) ☐Less than 500 ml (approx 2 glasses) ☐500 ml-1L (approx 2-4 glasses)	☐Less than 500 ml (approx 2 glasses) ☐500 ml-1L (approx 2-4 glasses)

☐1-1.5L (approx.. 4-6 glasses) ☐1.5-2L (approx.. 6-8 glasses) More than 2 L (More than 8 glasses)	☐1-1.5L (approx.. 4-6 glasses) ☐1.5-2L (approx.. 6-8 glasses) More than 2 L (More than 8 glasses)
11. What is your most preferred time of water intake? Before food/ After food/ In between food	Before food/ After food/ In between food
12. How often do you eat foods that cause you digestive discomfort (such as bloating, acidity, gas or indigestion)? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
13. Are you experiencing hunger before the consumption of every meal? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
14. Do you experience pure belching before eating a meal? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
15. Do you experience any of these after eating a meal? Abdominal distention Always / Often/ Rarely/ Nil Abdominal pain Always / Often/ Rarely/ Nil Heaviness Always / Often/ Rarely/ Nil Tiredness Always / Often/ Rarely/ Nil	a) Abdominal distention Always / Often/ Rarely/ Nil b) Abdominal pain Always / Often/ Rarely/ Nil c) Heaviness Always / Often/ Rarely/ Nil d) Tiredness Always / Often/ Rarely/ Nil
16. Do you suffer from heartburn or acid reflux in a day? Always / Often/ Rarely/ Nil If 'Always' have you observed any food items which trigger that?	Always / Often/ Rarely/ Nil If 'Always' have you observed any food items which trigger that?
17. Do you pass stools dialy? Always / Often / Rarely / Nil	Always / Often/ Rarely/ Nil
18. Do you pass stools soon after having food everyday? Yes/No	19. Do you pass stools soon after having food everyday? Yes/No
19. What is the consistency of your stool? ☐Hard and formed ☐ Soft but formed ☐loose and unformed liquid	☐Hard and formed ☐Soft but formed ☐loose and unformed liquid
20. Do you engage in heavy exercise within one hour after having food? (Running, Long walk, etc, or similar other strenuous activities) Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
21. Do you take bath within one hour after eating? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
22. Are your food choices influenced by smell or taste rather than hunger? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil

23. Do you crave food when stressed or emotional? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
24. Do you have a habit of ingesting cold and hot food together or consuming cold food soon after hot food or vice versa? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
25. Do you include following food items in your diet? a) Boiled vegetables Always / Often/ Rarely/ Nil b) Fruits Always / Often/ Rarely/ Nil c) Vegetable salad Always / Often/ Rarely/ Nil	26. Do you include following food items in your diet? a) Boiled vegetables Always / Often/ Rarely/ Nil b) Fruits Always / Often/ Rarely/ Nil c) Vegetable salad Always / Often/ Rarely/ Nil
26. Do you have a habit of snacking in the middle of the night? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil

I. Food Frequency Questionnaire

This is assessed using a 'food frequency questionnaire'.

The following food frequency questionnaire is designed to estimate your usual eating pattern. For each food listed, check the box indicating how often during the past year you usually ate the amount specified in the parentheses.

If you ate a food only at certain times of year (ex., summer), average your intake over the year. The pattern you report should reflect usual eating habits, not the pattern of a short-term diet, some other unusual circumstance, or what you think you should eat.

The boxes include monthly, weekly, and daily categories:

Never or (about) less than once a month (<1/month) 1 per week (about once a week)

2-4 (times) per week

1 per day

2 + times a day

For example, foods you never or rarely eat would be checked "never". A food eaten only a few times during a particular season would also be checked "never". Foods eaten only a few times during the week or eaten a few times on the weekend would be checked "2-4 times a week". A food eaten more than once a day would checked "2+times a day".

If you cannot estimate your usual intake of the food for any reason, leave the item blank. Dietary modifications made for 1 month or more are to be filled in the second part

Food and Amounts Per Serving	Before making dietary modifications					After making dietary modifications				
1. Cereals & Cereal-Based Preparations	Never or <1 Per month	1 Per Week	2-4 Per Week	1 Per day	2+ Per day	Never Or <1 Per month	1 Per Week	2-4 Per week	1 Per day	2+ Per day
i. White rice (plain) (½ cup)										
ii. Red rice (plain) (½ cup)										
iii. Brown rice (plain) (½ cup)										
iv. Rice preparations										
a) Puttu (1piece)										
b) Appam (1)										

c) Dosa (1) d) Idli (1) d) Kozhukatta (1) e) Pathiri (1) f) Pazhamkanji (serving)										
v. Wheat										
Food and Amounts Per Serving	Before making dietary modifications					After making dietary modifications				
1. Cereals & Cereal-Based Preparations	Never or <1 Per month	1 Per Week	2-4 Per Week	1 Per day	2+ Per day	Never Or <1 Per month	1 Per Wee k	2-4 Per week	1 Per day	2+ Per day
i. White rice (plain) (½ cup)										
ii. Red rice (plain) (½ cup)										
iii. Brown rice (plain) (½ cup)										
iv. Rice preparations g) Puttu (1piece) h)Appam (1) i) Dosa (1) j) Idli (1) d) Kozhukatta (1) k) Pathiri (1) l) Pazhamkanji (serving)										
v. Wheat										
a) Chapati (1) b) Poori (1) c) Dosa (1) d) Puttu (1 piece) Upma (½ cup)										
vi. Ragi (½ cup)										
vii. Millet (½ cup)										
viii. Kodo millet (½ cup)										
ix. Kaatuvaraku (½ cup)										
x. Quinoa (½ cup)										
xi. Proso millet (½ cup)										
xii. Rava & preparations (½ cup)										
xiii. Maida (Porotta etc) (1)										
xiv. Bread (1 slice) a) Whole grain bread b) White bread Brown bread										
xv. Semiya (½ cup)										
xvi. Noodles (½ cup)										
xvii. Oats (½ cup)										
xviii. Cornflakes (½ cup)										
xix. Pasta (½ cup)										
2.Diary Foods and Fats										
i. Skimmed milk (cup)										

ii. Whole Milk (cup)										
iii. Curd (1/2 cup)										
iv. Buttermilk (cup)										
v. Cheese (1slice)										
vi. Paneer (½ cup)										
vii. Butter (1tsp)										
viii. Yoghurt (1cup)										
3. Vegetables										
i. Coconut (½ cup)										
ii. Bitter gourd (½ cup)										
iii. Bottle gourd (½ cup)										
iv. Green beans (½ cup)										
v. Long beans (½ cup)										
vi. Egg plant (½ cup)										
vii. Kale (½ cup)										
viii. Collard greens (½ cup)										
ix. Soyabean (½ cup)										
x. Tomato (½ cup)										
xi. Onion (½ cup)										
xii. Brinjal (½ cup)										
xiii. Pumpkin (½ cup)										
xiv. Ladies' finger (½ cup)										
xv. Coccinea (½ cup)										
xvi. Lentils (½ cup)										
xvii. Chilli (2-3)										
xviii. Raw banana (½ cup)										
xix. Ash gourd (½ cup)										
xx. Cucumber (½ cup)										
xxi. Drumstick (½ cup)										
xxii. Stalk of lotus (½ cup)										
xxiii.Corn (½ cup)										
Tubers										
xxiv.Carrot (½ cup)										
xxv. Beetroot (½ cup)										
xxvi.Tapioca (½ cup)										
xxvii. Yam (½ cup)										
xxviii.Potato (½ cup)										
xxix.Sweet potato (½cup)										
xxx. Radish (½ cup)										
xxxi.Garlic (2-3)										
xxxii. Chinese potato (½ cup)										

xxxiii.Rhizome of lotus (½ cup)										
Leafy Vegetables & Others										
xxxiv.Cabbage (½ cup)										
xxxv. Coriander leaves (½ cup)										
xxxvi.Curry leaves (½ cup)										
xxxvii. Cauliflower (½ cup)										
xxviii.Spinach (½ cup)										
xxxix.Moringa leaves (½ cup)										
xl.Safflower (½ cup)										
xli. Mustard leaves (½ cup)										
xlii. Broccoli (½ cup)										
4.Pulses & Legumes										
i. Green gram (½ cup)										
ii. Horse gram (½ cup)										
iii. Black gram (½ cup)										
iv.Chana dal (½ cup)										
v. Rajma (½ cup)										
vi.Lobia (½ cup)										
vii. Masoor dal (½ cup)										
viii. Toor dal (½ cup)										
ix.Urad dal (½ cup)										
x. Chana (½ cup)										
xi.Soya chunks (½ cup)										
5.Meat & Other Alternatives										
i. Chicken (Serving)										
ii. Duck (Serving)										
iii. Quail (Serving)										
iv. Beef (Serving)										
v. Lamb (Serving)										
vi.Pork (Serving)										
vii. Buffalo (Serving)										
viii. Rabbit (Serving)										
ix. Mutton (Serving)										
x. Dark Meat Fish (Salmon, Mackerel, Tuna, Swordfish) (Serving)										
xi. Pale fleshed fish (Sardines, Green chromide, Seer fish) (Serving)										
xii.Dried meat/Dried fish (Serving)										
xiii. Shrimp (Serving)										
xiv. Lobster (Serving)										

xv.Frog (Serving)										
xvi. Egg (1)										
xvii. Pizza (Serving)										
xviii. Burger (1)										
6.Fats &Oils										
i. Coconut oil (1 tsp)										
ii. Sunflower oil (1 tsp)										
iii. Dalda/Vanaspa ti (1 tsp)										
iv. Olive oil (1 tsp)										
v. Ghee (1 tsp)										
vi. Palm oil (1 tsp)										
vii.Gingelly oil (1 tsp)										
viii. Mustard oil (1 tsp)										
7. Spices										
i. Cardamom										
ii. Cinnamon										
iii. Clove										
iv. Pepper										
v. Turmeric										
vi. Ginger										
8. Sweets & Baked Goods										
i. Pedas (1)										
ii. Brownie (1)										
iii. Cake (slice)										
iv. White bread (slice)										
v. Pastries (1)										
vi. Ice creams (1)										
vii.Crackers (1)										
viii. Burger (1)										
ix. Pizza (slice)										
x. Ladoo (1)										
xi. Jalebi (1)										
xii.Cookie (1)										
xiii. Pups (1)										
xiv.White bread										
xv.Biscuit (1)										
xvi. Candy (1)										
xvii. Jaggery (½ cup)										
9. Beverages										
i. Coffee with milk (glass)										
ii. Coffee with sugar (glass)										

iii. Coffee without sugar (glass)										
iv. Black coffee (glass)										
v. Tea with milk (glass)										
vi. Tea with sugar (glass)										
vii.Tea without sugar (glass)										
viii. Black tea (glass)										
ix. Green tea (glass)										
x. Herbal tea (glass)										
xi. Carbonated drinks (glass)										
xii.Energy drinks (glass)										
xiii. Fresh juice (glass)										
xiv. Beer (glass)										
xv.Wine (glass)										
xvi. Liquor (glass)										
xvii. Tender coconut water (glass)										
10. Fruits										
i. Banana (1)										
ii. Orange (1)										
iii. Apple (1)										
iv. Guava (1)										
v. Mosambi (1)										
vi. Mango(1)										
vii.Grapes (1 bunch)										
viii. Raisins (8-10 no)										
ix. Dates (½ cup)										
x. Pineapple (½ cup)										
xi. Watermelon (1 slice)										
xii. Papaya (½ cup)										
xiii. Sapota (1)										
xiv. Gooseberry (1)										
xv. Musk melon (1 slice)										
xvi. Lemon										
xvii. Jackfruit (3-4 segments)										
xviii. Cherry (½ cup)										
xix. Bromelain (½ cup)										
xx. Berries (½ cup)										
xxi. Avacado (¼ cup)										
xxii. Blackberry (½ cup)										
xxiii. Figs (½ cup)										
xxiv. Monkey jackfruit (½ cup)										
xxv. Black nightshade (5-6)										
xxvi. Indian cherry (1)										

xvii. Indian Plum (1)										
11. Seeds and Nuts										
i. Sesame seeds (1-2 tsp)										
ii. Flax seeds (1-2 tsp)										
iii. Pumpkin seeds (¼ cup)										
iv. Chia seeds (1-2 tsp)										
v. Badam (5-10)										
vi. Cashew (5-10)										
vii. Walnut (5)										
viii. Peanut (5-10										
ix. Sunflower seeds (1-2 tsp)										
12.Miscellaneous										
i. Peanut butter (1 tsp)										
ii. Honey (1 tsp)										
iii. Pickle (1 tsp)										
iv. Popcorn (½ cup)										
v. Pudding (1 tsp)										
vi. Chocolate (1)										
vii. Jams (1 tsp)										
viii. Yeast										
ix. Tomato sauce (1tsp)										
x. Vinegar (1 tsp)										
13. Snacks										
i. Pazhampori (1)										
ii. Sukhiyan (1)										
iii. Parippu vada (1)										
iv. Uzhunnu vada (1)										
v. Ilayada (1)										
vi. Baji (1)										
vii. Bonda (1)										
14. Food Combinations										
1. Milk with Red rice Barley Proso millet Kaatuvaraku Kodo millet										
2.Curd with Red rice Barley Proso millet Kaatuvaraku Kodo millet										
3.Buttermilk with Red rice Barley Proso millet Kaatuvaraku Kodo millet										
4. Milk + Banana (Drink milk while eating a banana/Milkshake)										

5.Chicken Biriyani + dairy products (Yoghurt, Icecream, Paneer etc)										
6.Milk + Baked food (Bread, Bun, Loaf, Cake, etc)										
7. Fermented products like dosa /appam + milk/milk tea										
8.Salted snacks + Milk Tea										
9. Fish + Uzhunnu preparations (Idli, Dosa)										
10.Milk + Non veg Snacks (Cutlet, Pizza, Burger)										
11.Raw food + Cooked food (eg: Uncooked chutney, Vegetable as a side dish)										
12. Chapati/Rice + salads										
13. Mayonnaise										
14.Wheat preparations + Tea/ Coffee										
15.Milk & Fish (fish curry as side dish)										
16. Fruit salad (Sweet & Sour fruit mix)										
17.Raw mango + Salt										
18.Meat Shawarma										
19.Deep fried items (chips, French fries)										
20.Ghee preparations with cold drink (Kesari, Peda, Halwa)										
21.Cold drinks after hot tea /coffee										
22.Stale food (unfavourable changes occurred in its taste, colour, smell)										

Socio Cultural Aspects of Food Intake

Guiding table for frequency observation

Frequency of intake	**Assessment**
4 or 5 days or more in a week	Always
2 or 3 days in a week	Often
1 day / 1 or 2 meal times in a week / A few times on weekend	Rarely
Never following	Nil

Questions Regarding Sociocultural Aspects of Food Intake

Before making dietary modifications	**After making dietary modifications**
1.How often do you consume freshly prepared food? (within 12hrs of making)	Always / Often / Rarely /Nil
2. How often do you consume reheated food items? Always / Often / Rarely /Nil	Always / Often / Rarely /Nil

3. How often do you consume refrigerated food items? Always / Often / Rarely /Nil	Always / Often / Rarely /Nil
4. Do you completely avoid oil in your diet? Always / Often / Rarely /Nil	Always / Often / Rarely /Nil
5. Do you take food in the following surroundings? • Crowded Always/often/rarely/nil • Untidy Always / Often/ Rarely/ Nil • Unpleasant Always / Often/ Rarely/ Nil	• Crowded Always/often/rarely/nil • Untidy Always / Often/ Rarely/ Nil • Unpleasant Always / Often/ Rarely/ Nil
6. Do you consume food very fast without chewing properly? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
7. Do you consume food without giving attention to taste, smell, or the quality of food? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
8. Does your food become cold before you finish eating? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
9. Do you take food while watching TV or using your mobile phone? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
10. Do you talk and laugh during taking food? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
11. Do you frequently change your food pattern? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
12. Do you make changes in your diet in appropriate to seasons? (Warm easy to digest in Rainy, Avoiding spicy and salty in Summer) Always / Often / Rarely /Nil	Always / Often / Rarely /Nil
13. (If Often /Rarely / Nil) How often do you consume food which is inappropriate to the season? (Consuming cold and difficult to digest food items in the rainy season, consuming spicy dry food items in summer) Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
14. What influences your choice of food? (Arrange in preference from most preferred to least) ☐Taste ☐Cost ☐ Nutritional value ☐ Cultural/traditional preferences ☐ Religious beliefs Availability	☐Taste ☐Cost ☐ Nutritional value ☐ Cultural/traditional preferences ☐ Religious beliefs Availability

15. Which taste do you consume the most? (more than 2 per day) ☐Sweet ☐Sour ☐Salt ☐Bitter ☐Astringent 15. Pungent	☐Sweet ☐Sour ☐Salt ☐Bitter ☐Astringent Pungent
16. What is the frequency with which you consume these food items? a) Home-cooked food Always / Often/ Rarely/ Nil b) Hotel/Takeaway/Fast food Always / Often/ Rarely/ Nil c) Packaged/Processed food Always / Often/ Rarely/ Nil	a) Home-cooked food Always / Often/ Rarely/ Nil b) Hotel/Takeaway/Fast food Always / Often/ Rarely/ Nil Packaged/Processed food Always / Often/ Rarely/ Nil
How often do you follow fixed meal timings?	
Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
Do you skip your meals mostly? 1.Breakfast Always / Often/ Rarely/ Nil 2.Lunch Always / Often/ Rarely/ Nil 3. Dinner Always / Often/ Rarely/ Nil	1.Breakfast Always / Often/ Rarely/ Nil 2.Lunch Always / Often/ Rarely/ Nil 3.Dinner Always / Often/ Rarely/ Nil
17. How often do you consume unpleasant or disliked food? Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil
20. Do you sleep soon after having your food? a) After Breakfast Always /Often/ Rarely/ Nil 18. After Lunch Always / Often/ Rarely/ Nil c) After Dinner 21. Always/ Often /Rarely/ Nil	After Breakfast Always / Often/ Rarely/ Nil After Lunch Always / Often/ Rarely/ Nil c) After Dinner Always/ Often/ Rarely/ Nil
21. Do you follow any religious dietary restrictions? ☐ Vegetarianism ☐ No pork ☐ No beef ☐ Fasting days ☐ Other (specify): ___ None	☐ Vegetarianism ☐ No pork ☐ No beef ☐ Fasting days ☐ Other (specify): ___ None
22. Do you fast regularly due to religious reasons? 22. Yes ☐ No	Yes ☐ No
23. Do you eat meals together with your family? 23. Always / Often/ Rarely/ Nil	Always / Often/ Rarely/ Nil

24. Are your food choices influenced by your social circle (friends, colleagues, neighbours)? Always / Often / Rarely /Nil	Always / Often / Rarely /Nil
25. Do you tend to change your eating habits during social gatherings? Always / Often / Rarely /Nil	Always / Often/ Rarely/ Nil

(Only those who have answered the second column shall fill this part)

Likert Scale to Record Patient Perceived Skin Improvements

Symptoms	Worsened	No change	Improved	Fully clear
Itching				
Redness				
Thickness				
Scaling				
Sleep				

CONTENT VALIDATON TABULATED RESULTS

For the present study, content validation was performed by a panel of ten experts, including eight faculty members from different departments of this institution and two experts from other Ayurveda colleges in Kerala. The experts assessed each item for clarity, adequacy, and relevance. Ratings categorized as A or B were coded as 1, while ratings categorized as C or D were coded as 0, and these scores were subsequently utilized for CVI calculation.

Experts in agreement: For each item, the total number of experts who rated the item as either A or B was summed to determine the number of experts in agreement.

Universal Agreement (UA):

A score of 1 was assigned to an item if all experts rated it as relevant (i.e., provided a relevance rating of 1). If even one expert did not give a relevance rating of 1, the item received a score of 0.

I-CVI (Item-Level Content Validity Index):

The I-CVI for each item was calculated by dividing the number of experts in agreement (those who assigned a rating of A or B) by the total number of experts.

S-CVI (Scale-Level Content Validity Index):

Two approaches were used to determine the S-CVI:

1. S-CVI/Ave (Average Method):

Calculated by taking the average of all I-CVI values across the items, providing an overall indication of the scale's content validity.

2. S-CVI/UA (Universal Agreement Method):

Calculated by determining the percentage of items on the scale that received a relevance rating of A or B from all experts, indicating unanimous agreement regarding item relevance.

Clarity rating on items scale by 10 experts:

1. Physiological dimensions of food intake clarity rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 3	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 5	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 9	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0
Expert 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert in agreement	10	10	10	8	10	10	10	10	10	10	10	10	10	9	10	9
ICV-I	1	1	1	.8	1	1	1	1	1	1	1	1	1	.9	1	.9
UA	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	0

Experts	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	S- CVI/ Ave	S- CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	0	1	1		
Expert 7	1	1	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	1	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	9	10	10		
ICV-I	1	1	1	1	1	1	1	1	.9	1	1	**0.981**	
UA	1	1	1	1	1	1	1	1	0	1	1		**0.851**

2.Food frequency questionnaire clarity rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	S-CVI/ Ave	S CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
ICV I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**1**	
UA	1	1	1	1	1	1	1	1	1	1	1	1	1	1		**1**

3. Socio-cultural aspects of food intake clarity rating-Table no: 24

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 3	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 9	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Expert 10	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Expert in agreement	10	10	10	10	10	10	10	7	10	10	9	10	10	10	10	10
ICV-I	1	1	1	1	1	1	1	.7	1	1	.9	1	1	1	1	1
UA	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1

Experts	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	S-CVI/ Ave	S- CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	1		
Expert 7	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	10		
ICV-I	1	1	1	1	1	1	1	1	1	**0.984**	
UA	1	1	1	1	1	1	1	1	1		**0.923**

4. Likert scale clarity rating - Table no: 25

Experts	Q1	Q2	Q3	Q4	Q5	S- CVI/ Ave	S - CVI/ UA
Expert 1	1	1	1	1	1		
Expert 2	1	1	1	1	1		
Expert 3	1	1	1	1	1		
Expert 4	1	1	1	1	1		
Expert 5	1	1	1	1	1		
Expert 6	1	1	1	1	1		
Expert 7	1	1	1	1	1		
Expert 8	1	1	1	1	1		
Expert 9	1	1	1	1	1		
Expert 10	1	1	1	1	1		
Experts in agreement	10	10	10	10	10		
I CVI	1	1	1	1	1	**1**	
UA	1	1	1	1	1		**1**

The above I-CVI scores are a measure of percentage of experts who rated on the clarity. For more items the I-CVI was 1, indicating unanimous agreement among the experts regarding the clarity.

The Scale-Level Content Validity Index Using Average Method (S-CVI/Ave) was calculated by averaging the I-CVI scores for clarity. For physiological dimensions of food intake S- CVI /Ave is 0.981. For FFQ, S- CVI/Ave is 1. For socio- cultural aspects S-CVI/Ave is 0.984 and The scale level content validity index based on universal agreement method(S-CVI/UA) was 0.851 for physiological dimensions of food intake. For FFQ, S-CVI/UA is 1 and for socio-cultural aspects S-CVI/UA is 0.923.

Sufficiency rating on items scale by 10 experts:

1.Physiological dimensions of food intake sufficiency rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 6	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 9	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0
Expert 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Expert in agreement	10	10	10	9	10	10	9	10	10	10	10	10	10	10	10	8
ICV-I	1	1	1	.9	1	1	.9	1	1	1	1	1	1	1	1	.8
UA	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	0

Experts	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	S -CVI/Avg	S -CVI/UA
Expert 1	1	1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	0	1	1		
Expert 7	1	1	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	1	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	9	10	10		
ICV-I	1	1	1	1	1	1	1	1	.9	1	1	**.981**	
UA	1	1	1	1	1	1	1	1	0	1	1		**.851**

2.Food frequency questionnaire sufficiency rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	S-CVI/ Ave	S -CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1		

Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
ICV I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	**1**	
UA	1	1	1	1	1	1	1	1	1	1	1	1	1	1		**1**

3. Socio-cultural aspects of food intake sufficiency rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 9	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Expert 10	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
Expert in agreement	10	10	10	10	10	10	10	8	10	10	10	10	10	10	10	10
ICV-I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
UA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Experts	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	S-CVI/ Avg	S-CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	1		
Expert 7	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	10		
ICV-I	1	1	1	1	1	1	1	1	1	**1**	
UA	1	1	1	1	1	1	1	1	1		**1**

4. Likert scale sufficiency rating

Experts	Q1	Q2	Q3	Q4	Q5	S-CVI/ Avg	S-CVI/ UA
Expert 1	1	1	1	1	1		
Expert 2	1	1	1	1	1		
Expert 3	1	1	1	1	1		
Expert 4	1	1	1	1	1		
Expert 5	1	1	1	1	1		
Expert 6	1	1	1	1	1		
Expert 7	1	1	1	1	1		
Expert 8	1	1	1	1	1		
Expert 9	1	1	1	1	1		
Expert 10	1	1	1	1	1		
Experts in agreement	10	10	10	10	10		
I CVI	1	1	1	1	1	**1**	
UA	1	1	1	1	1		**1**

The above I-CVI scores area measure of percentage of experts who rated on the sufficiency. For most items, the I-CVI was 1, indicating unanimous agreement among the experts regarding the sufficiency of the questions.

The Scale-Level Content Validity Index Using Average Method (S-CVI/Ave) was calculated by averaging the I-CVI scores for clarity. For physiological dimensions of food intake S- CVI /Ave is 0.981. For FFQ, S- CVI/Ave is 1. For socio- cultural aspects S-CVI/Ave is 1 and The scale level content validity index based on universal agreement method (S-CVI/UA) was 0.851 for physiological dimensions of food intake. For FFQ, S-CVI/UA is 1 and for socio-cultural aspects S-CVI/UA is 1.

Relevance rating on items scale by 10 experts:

1. Physiological dimensions of food intake relevance rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Expert 3	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 5	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert in agreement	10	10	9	8	10	10	10	10	10	8	9	10	10	10	9	10
ICV-I	1	1	.9	.8	1	1	1	1	1	.8	.9	1	1	1	.9	1
UA	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1

Experts	Q 17	Q 18	Q 19	Q 20	Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	S CVI/ Avg	S CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	0	1	1		
Expert 4	1	1	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	0	1	1		

Expert 7	1	1	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	0	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	7	10	10		
ICV-I	1	1	1	1	1	1	1	1	.7	1	1	**0.962**	
1	1	1	1	1	1	1	1	0	1	1		**0.851**	

2. Food frequency questionnaire relevance rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	S-CVI / Ave	S-CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Expert in agreement	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
ICV I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
UA	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1

3. Socio-cultural aspects of food intake relevance rating

Experts	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Expert 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Expert 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Expert 9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Expert 10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Expert in agreement	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	7
ICV-I	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.7
UA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

Experts	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	S CVI/ Avg	S CVI/ UA
Expert 1	1	1	1	1	1	1	1	1	1		
Expert 2	1	1	1	1	1	1	1	1	1		
Expert 3	1	1	1	1	1	1	1	1	1		
Expert 4	1	1	1	1	1	0	0	1	1		

Expert 5	1	1	1	1	1	0	0	1	1		
Expert 6	1	1	1	1	1	1	1	1	0		
Expert 7	1	1	1	1	1	1	1	1	1		
Expert 8	1	1	1	1	1	1	1	1	1		
Expert 9	1	1	1	1	1	0	1	1	1		
Expert 10	1	1	1	1	1	1	1	1	0		
Expert in agreement	10	10	10	10	10	7	8	10	8		
ICV-I	1	1	1	1	1	.7	.8	1	.8	**0.961**	
UA	1	1	1	1	1	0	0	1	0		**0.851**

4. Likert scale relevance rating

Experts	Q1	Q2	Q3	Q4	Q5	S CVI/ Avg	S CVI/ UA
Expert 1	1	1	1	1	1		
Expert 2	1	1	1	1	1		
Expert 3	1	1	1	1	1		
Expert 4	1	1	1	1	1		
Expert 5	1	1	1	1	1		
Expert 6	1	1	1	1	1		
Expert 7	1	1	1	1	1		
Expert 8	1	1	1	1	1		
Expert 9	1	1	1	1	1		
Expert 10	1	1	1	1	1		
Experts in agreement	10	10	10	10	10		
I CVI	1	1	1	1	1	1	
UA	1	1	1	1	1		1

The I-CVI scores are a measure of the percentage of experts who rated each item as relevant. For most items I-CVI was 1indicating unanimous agreement among the experts regarding relevance of it.

The Scale-Level Content Validity Index Using Average Method (S-CVI/Ave) was calculated by averaging the I-CVI scores for clarity. For physiological dimensions of food intake S- CVI /Ave is 0.962. For FFQ, S- CVI/Ave is 1. For socio- cultural aspects S-CVI/Ave is 0.961 and the scale level content validity index based on universal agreement method(S-CVI/UA) was 0.851 for physiological dimensions of food intake. For FFQ, S-CVI/UA is 1 and for socio-cultural aspects S-CVI/UA is 0.851.

Based on the above calculations regarding the content validity of dietary behaviours questionnaire shows significant level of both I-CVI and S-CVI.