ORIGINAL ARTICLE

Development and Validation of Salt@Home Questionnaire Measuring Salt Intake

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ABSTRACT

Introduction: The Salt@Home method seeks to explore an effective approach for estimating sodium and salt consumption from food and identifying sources of dietary salt intake, implementing a method comparable to 24-hour urine collection and Food Frequency Questionnaires (FFQ). **Materials and Method**: The Salt@Home Questionnaire involves households which assess various psychosocial and nutritional factors related to dietary salt intake, such as knowledge, attitude, practice, self-efficacy, and challenges in reducing salt consumption, covering diet, monosodium glutamate intake, sodium intake, lifestyle, and physical activity. The questionnaire consists of 18 sections with 138 items. The face validity was tested with 10 adults, and content validity was assessed by eight experts from diverse backgrounds. **Results:** The face validity index (S-FVI) values were deemed acceptable with scores of 0.961, 0.960, and 0.977 for relevance, clarity, and essentiality, respectively. The content validity index (S-CVI) values also met acceptable values with scores of 0.952, 0.963, and 0.957 for relevance, clarity, and essentiality. The content validity ratio (CVR) exceeded the minimum value of 0.8. Cronbach's Alpha coefficients for all sections ranged from 0.52 to 0.93, indicating moderate to excellent reliability. **Conclusion:** The Salt@Home Questionnaire demonstrated acceptable FVI, CVI, CVR, and Cronbach's Alpha values, ensuring that all sections are suitable for future studies on dietary salt intake. Further research on the Salt@Home method could enhance understanding of household salt intake without requiring laboratory analysis, making it accessible to non-professionals.
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INTRODUCTION

High blood pressure is a global problem that significantly impacts universal well-being (1–3). High blood pressure, whether alone or combined with other metabolic conditions, raises the risk of cardiovascular disease. Approximately one-third of the Malaysian adult population was affected by high blood pressure, significantly linked to high salt intake (4,5). This study aims to investigate a practical method, Salt@Home, to estimate sodium dietary salt intake and identify the sources of salt intake in households compared to a 24-hour urine collection.

Salt intake at the national level is exceeding the recommendation level in Malaysia. The average salt intake increased from 8.7 g to 10.5g, whereby the recommended salt intake by WHO is 5 g of salt per day (6). Several studies have shown similar results in which the Food Frequency Questionnaire (FFQ) response tends to be overestimated and over-reported among individuals recruited. Furthermore, most studies showed that salt intake was assessed based on individual intake rather than household intake, as salt will be used for food preparation for the overall household (4,7–9). This may be due to the current questionnaire, which only has items that could not quantify overall salt intake. It focuses on individual intake rather than household as well. Thus, this study will provide a new method to measure absolute dietary salt intake rather than just estimating based on FFQ, especially at the household level. To estimate individual intake, the household intake will be divided by the number of people.

Although 24-hour urine collection is considered the gold standard for assessing salt dietary intake, it is not accurate in which high sodium in urine could be obtained from non-salt sources or salt substitutes, such as monosodium glutamate (MSG); therefore, urine sodium could over-reporting the salt intake (10). Furthermore, the Salt@Home method could become a non-invasive and non-laboratory work approach compared to this gold standard.

Although many interventions and national programs have been conducted to reduce salt intake among Malaysians, numerous studies show that Malaysians who have high knowledge concerning salt intake still consume a high amount of salt, which could be due to over-reporting. In addition, studies provided evidence that those who have high knowledge concerning salt intake are still consuming a high amount of salt, indicating poor practice in salt usage. This creates a controversial finding and warrants a plausible explanation. Therefore, a new approach considering the absolute salt intake at the household level should be developed to avoid the issue of over-reporting. Existing methods may be prone to over-reporting due to failure to capture the reported amount considered as dietary salt intake consumption at the household level rather than the individual level. Therefore, the Salt@Home method was proposed as a new and practical approach to measuring salt intake. The Salt@Home method may serve as a better method to quantify salt intake and provide a genuine association with knowledge, attitude, self-efficacy, barriers, and lifestyle factors.

The Salt@Home method is a dietary salt intake assessment quantified as household-level intake based on three principles which are: cooking for the family, processed food consumption, and eating outside, which can determine individual salt intake as well. The Salt@Home method was proposed so that salt consumed at the household level will be assessed rather than only obtained at the individual level, which is the current methodologies used for salt intake namely 24-hour urine collection and Food Frequency questionnaire (FFQ) (4,7,9–11). The Salt@Home questionnaire also assesses several factors under psychosocial and nutritional aspects that could impact dietary salt intake including knowledge, attitude, practice, self-efficacy, barriers as well as dietary intake, monosodium glutamate (MSG) usage, salt intake, lifestyle, and physical activities (12–19).

The majority of research concentrates on complicated issues such as attitudes, behaviour, and practices to name a few (12,16,20,21), which need reliable approaches and instruments. The validity of an instrument is its capacity to assess the characteristics of the construct being studied, which must be considered while selecting or utilising an instrument. It may be recognised by its content validity, construct validity, and criterion-related validity, which are its three primary representations. Since another validity is required, content validity should be given high priority while creating an instrument. Validity is a property of the results an instrument produces when it is applied to a specific population of respondents and is not a characteristic of the instrument itself. As a result, for each study that makes use of an instrument, validity analysis should be acquired (22).

The Salt@Home method was proposed to tackle the challenges of the current methods in quantifying dietary salt intake assessments, which are also mostly conducted individually rather than targeting the household level. Additionally, this comprises the psychosocial factors to be explored as well. The questionnaire currently developed has not been thoroughly validated before, with all validity analyses measured in this study, even though some of its components were entirely adopted from previous studies. Thus, the general objective of this study is to develop and validate questionnaires related to the psychosocial factors investigated, which include knowledge, attitude, practice, self-efficacy, and barriers to salt intake at the household level.

Methods

Face validity is a type of validity test which indicates how effectively a test's content and items are seen as being relevant by participants in the environment in which the assessment is being conducted. The participants of the face validity are similar to the group population who will partake in the research, non-expert individuals who face the findings, and members of the general public. Although content experts play a critical role in content validity, another crucial aspect of content validation is instrument assessment by a sample of participants selected from the target demographic. These individuals are selected due to their familiarity with the construct through direct personal experience. Face-to-face interviews during the face-validity study with a few individuals of the target population are conducted as a part of the qualitative methodological study, whereby the difficulties mentioned in the interviews are highlighted as part of instrument development. However, the measurement method of face validity is, at most, a very weak type of justification that it is measuring what it should, in other words, it should be used as a supplementary validity test (23).

Another type of validity is called "content validity," also known as "logical validity" and "definition validity," which describes the degree to which the items chosen in the measure accurately represent the variables of the construct. This category of validity investigates the effectiveness of an instrument's items which reflect the focus of the theme. Additionally, it answers the query of how well the selected sample of a certain instrument or instrument components portrays the material. The content validity category provides the first indication of construct validity in an instrument. Additionally, seeking input from a group of specialists may provide details regarding the product's clarity and representativeness to aid in the improvement of an instrument, particularly so in a holistic field such as nutrition. If the content validity is not there, evaluating an instrument's dependability might be challenging. Content validity research necessitates a larger commitment of resources due to the seeking of experts; it allows the requirement for such resources in subsequent instrument development process evaluations, including the quantitative content validity approach, which measures content validity ratio (CVR) and maintains the confidence in determining the most essential and accurate content in an instrument (24).

Cronbach's Alpha is a statistical analysis frequently presented to indicate that tests and scales developed or utilized in research projects are appropriate for the research objective purposes. Studies on background in science frequently use Cronbach's alpha, typically as a reliability metric (25). Cronbach's alpha is a measure used to assess the reliability, or internal consistency, of a set of scale or test items. Cronbach's alpha is a measure of reliability but not validity. It can indicate whether responses are consistent between items (reliability). Cronbach alpha values of 0.7 or higher indicate acceptable internal consistency (26)

Study Design

This research methodology is a component of a larger research project which develops and assesses the psychometrics of an instrument for measuring salt dietary intake among adults attending government health clinics in the Hulu Langat district of Malaysia using a mixed-methods approach (combining qualitative and quantitative methods). The study adhered to ethical considerations throughout the research process. These considerations included obtaining approval from the UCSI Research Ethics Committee (IEC-2021-FAS-030), ensuring participants' anonymity, obtaining informed consent from participants, allowing participants to withdraw from the study if desired, and obtaining permission for audio or video recording, if applicable. Adherence to these ethical guidelines is crucial for maintaining the rights and well-being of the study participants. The study collected data in two stages: a qualitative phase and a quantitative phase.

The objectives of qualitative research are usually introduced to understand the concept and provide deeper understanding, particularly contents that are relatively difficult to quantify, such as processes, perceptions and patterns of human behaviour. Thus, this includes phenomena such as experiences, attitudes, and behaviours, which can be complex to capture accurately and quantitatively. For example, in this study, behavioural measures that fall under qualitative include knowledge, attitude practice, self-efficacy and barriers associated with salt intake. Although it is feasible to quantify qualitative data, the fundamental purpose of qualitative data is to identify themes and patterns that might be challenging to measure. Therefore, the core intent of qualitative data in this study would be to facilitate the development of the foundation to further investigate and understand quantitative data, which is specifically beneficial during content validation as well (27)

Participants

Data was gathered using a self-administered questionnaire with qualitative aspects during the qualitative stage. This data collection method involved 10 participants at LeQuadri Hotel, UCSI University, whose inclusive and exclusive criteria are random, purposive, and convenient individuals who meet the measures for future studies (23,24). A qualitative content analysis was used to evaluate the qualitative data. In the quantitative phase, a two-step process consisting of design and judgment was conducted. This phase involved collecting both qualitative and quantitative viewpoints from 8 experts as well as 10 participants, as described in the study by (24). The experts provided their perspectives on the instrument design and its appropriateness, which the latter phase will be focused on in this article.

Quantitative phase

Instrument Design

The instrument design process consists of three main phases: determining the content domain, item generation, and instrument construction. These phases are essential for developing a valid and reliable instrument (24).

The first phase involves identifying the construct that the instrument aims to measure, which is known as the content domain. Various methods can be employed to determine the content domain, such as reviewing relevant literature, conducting interviews with respondents, and organizing focus groups. Through these processes, the boundaries, size, and constituent parts of the construct can be clearly defined. Qualitative research techniques, including interviews with knowledgeable individuals, can provide valuable insights to enhance the understanding of the construct further, contributing to what is known as the face validity of the instrument.

The second phase, item generation, involves creating a pool of items that align with the content domain. This can be achieved through a literature review and the development of a table of specifications. The table of specifications examines the alignment between the elements (represented in columns) and the idea that constitutes the construct being investigated (represented in rows). To verify the significance and suitability of the items, experts provided both qualitative and quantitative information, which was gathered and assessed. It is also important to revisit the research objectives and ensure that the instrument items adequately reflect the research topics.

The final phase is instrument construction, where the refined components and items are organized and formatted to create a usable instrument. This phase involves arranging the items logically and finalizing the instrument's structure. The goal is to create a comprehensive instrument that effectively measures the intended construct.

Judgment process

The judgment process in instrument design involves evaluating the instrument's and its components' content validity by a panel of experts. This expert panel is carefully selected for this purpose, as the panel reflects not only the holistic approach of nutrition such as doctors, and researchers, but also experts with backgrounds in community and clinical nutrition, medicine, and food technology. While the exact number of experts is subjective, it is recommended to have at least two participants to ensure some level of control over unexpected agreement. Although the highest number of panellists is unknown, it is implausible it there would be more than ten experts that would be called upon. It is important to strike a balance between having a sufficient number of experts with diverse perspectives and avoiding an excessive number that could lead to chance agreement.

Once the expert panel is formed, their quantitative and qualitative opinions are analysed. The experts provide their assessments on various aspects such as relevance, clarity, and essentialness of the instrument's questions or items in measuring the construct that is operationally defined. The goal is to ensure the instrument's content validity, which means that it accurately captures the intended construct. Through the expert panel's input, the instrument was refined, and necessary revisions were made to improve its content validity. The experts' feedback helps to validate and strengthen the instrument, ensuring that it effectively measures the construct it intends to assess. It is worth noting that while the judgment process is crucial for content validity, it is only one aspect of the broader instrument design process, which also includes determining the content domain, item generation, and instrument construction.

Content Validation Process

The content validity of the questionnaire is based on the recommendations given by the panels of experts. Both potential participants and content experts are involved in validity studies, whereby potential research subjects are lay experts while content experts are specialists in their respective fields. By involving members of the target group as participants, it is assured that the population for whom the instrument is being developed is represented (23,28). There are two methods for doing content validation: face-to-face and remote methods. For the face-to-face method, the potential panellists are involved based on the questionnaire given for face validity, and the researcher facilitates the face validation process. Clear instructions were given to assist the content evaluation process for the remote method, and the experts received a form for content validation online.

Expenses, time, and the rate of response are the three most crucial variables that must be considered. Due to the difficulties of gathering all experts in one place, the face-to-face method may be more expensive and time-consuming, but the response rate will be the greatest. The major benefit of the non-face-to-face approach is the cost savings, but the response rate and time may be problematic due to the risk of not receiving a response at all from the expert and the difficulty of receiving a response on time. Nonetheless, if a methodical follow-up is implemented to enhance the response rate and time, the non-face-to-face strategy proves to be highly effective. For this study, a non-face-to-face method, which was individual discussion through online meetings based on their availability, was conducted due to the lockdown and COVID restrictions implemented among the experts participating. The content validation process follows a thorough, one-by-one, detailed discussion based on the sequential order of the questionnaire itself and the experts' feedback was integrated into the questionnaire accordingly for all the experts' comments progressively. Although there were comments requiring explanations or details for the significance of the questions, subsequent revisions were done based on the reiterative process of validation, which includes removing, modifying or creating entire questions to be more relevant, clear, and provide clarity to the participants.

Content validation form preparation

Developing the content validation questionnaire is the first stage in content validation, which ensures that the expert review panel will comprehend the tasks expected of them and their expectations. Every item has been scored using the suggested relevance rating scale. The definition of the domain to facilitate the scoring process by the experts was provided on the content validity form given.

The review panel of experts' selection

The expert chosen to examine and evaluate an assessment instrument (such as a questionnaire) is often selected according to their level of competence with the subject matter. Though most suggestions require a minimum of six experts, it is generally accepted that two experts are the minimum acceptable number for content validation. At least six experts, but no more than 10, should be involved in content validation (28).

Reviewing domain and factors

In the content validation questionnaire, the parameters of the research domain and the various components that represent the research topic are made apparent to the experts. The experts are requested to rigorously understand the subject matter and its constituent parts before rating each item. To increase the items' relevance to the intended subject, experts are urged to offer written or spoken commentary. The domain and its items are refined in response to any comments.

Providing a score on each item

Once the reviewing of the subject matter and items has been done, the panellists are asked to independently rate every item using the applicable scale. After the panellists have finished providing the score on every issue, the submission of their comments must be given to the researcher.

Calculating FVI

Face Validity Index (FVI was analysed according to (23), whereby mentioned that I-FVI (item-level face validity index) is the number of respondents assigning an item clearness and comprehension assessment of 3 or 4 and S-FVI/Ave (scale-level face validity index) is based on the overall method of the I-FVI rating for every item measured judged by all respondents. In other words, the number of clearness and understanding is the overall score-based individual. This is the formula used for I-FVI = (agreed item)/ (number of raters) and S-FVI/Ave = (sum of I-FVI scores)/ (number of items).

Calculating CVI

Content Validity Index (CVI) for an item (I-CVI) and CVI for scale (S-CVI) are the two known methods of CVI. There are two approaches to calculating S-CVI: the number of items on the scale that get a relevance scale of 3 or 4 from all experts (S-CVI/UA) and the average of the I-CVI rating for all items on the scale (S-CVI/Ave). Relevance ratings must be indicated as 1 (on a relevance scale of 3 or 4) or 0 (on a relevance scale of 1 or 2) before the CVI calculation. Currently for 8 experts, the CVI values must be a minimum of 0.83 in this research (28)

Regarding the content validity ratio, the panellists were asked to clarify if a certain item is necessary to reflect the aim of the factors in a set of items concerning the content validity ratio. They are asked to rank each item based on the objective on a scale of 1 to 3, with 1 denoting "not required," 3 denoting "helpful but not vital," and 4 denoting "essential." The ratio of content validity spans from 1 to -1. The higher score indicates greater consensus among panellists about the significance of a certain item in the questionnaire (29).

In the content validity, after selecting eight experts from the nutrition field ranging from nutritionists to lecturers, and medical doctors, the expert panellists were gathered to make both quantitative judgments through a self-administered questionnaire and qualitative conclusions on the factors of the instrument. The correspondence was done via e-mail or online meeting, whereby the request was given, which comprised of the research objectives, the questionnaires, rating score method, and necessary guidelines on answering, thus panel members' content validity assessment was done through the online method based on their respective time availability. The panellists were asked to determine the content of the questionnaires on the relevancy, clarity, and essentialness of both quantitative and qualitative methods as we arranged individual one-to-one meeting arrangements.

The content validity assessment was done according to the recommendations of panel members to conclude the content validity index, content validity ratio, and questionnaire amendment qualitatively, the panellists were asked to judge to score 1 to 4 on relevance, clarity, and essentialness with the scoring of 1 to 3 of instrument items according to (28).

To generate a content validity index for every item, the number of panellists who deemed the item as relevant was split according to the total amount of content panellists (N=8). This was also done to make the instrument's items clearer. The panellists' agreement regarding the whole instrument was calculated for relevance according to specific items and their average rating. Additionally, the suggestions given by the content experts concerning the clarity of the questionnaire were also taken into consideration for the revision of the items.

The Content Validity Index (CVI) was determined according to (28), in which it was mentioned that I-CVI (item-level content validity index) is the number of content panellists assigning an item a relevance assessment of 3 or 4 whereas the S-CVI/Ave (scale-level content validity index) is according to the average calculation of the I-CVI rating for every factor on the rating scale. The formula used for I-CVI = (agreed item)/ (number of experts) and S-CVI/Ave = (sum of I-CVI scores)/ (number of items).

Results

The face validity was done based on quantitative content analysis through the questionnaire with ten participants regarding the Salt@Home questionnaire based on every 13 main sections with their respective subheadings and question items. Every section was characterised conceptually by incorporating quantitative studies and scientific literature according to the research objectives. During the item development phase, 138 items were the result of these sections and were arranged with 18 sub-sections resulting from the literature and the associated instruments. The items were examined by the research team for redundancy and repetition. The face validity was analysed through three criteria which are based on relevancy, clarity, and essentialness (23).

Content validity results of Salt@Home Questionnaire

According to Table 1, the relevance, clarity, and essentialness of the CVI values for the 8 content experts are all considered to be within the acceptable range value which based on (28), the acceptable CVI values for 6 to 8 experts are to be at least. The relevant CVI values varied from 0.83 to 1 with the average relevant S-CVI being 0.952. The clarity CVI values varied from 0.875 to 1 with the average clarity S-CVI being 0.963. The essential CVI varied ranged from 0.0.857 to 1 with the average essential S-CVI being 0.957.

CVR = (Ne - N/2)/(N/2) is the formula for the content validity ratio, where Ne is the number of panellists that are considered "essential", and N is the total number of panellists (29). Based on the Lawshe table for eight experts, the indicated minimal CVR value would be 0.75 (30). According to Table 1, for each respective section the CVR value is considered within the acceptable value more specifically, the S-CVI value ranges from 0.714 to 1.

Table I : Content Validation Data

Questionnaire Sections	Number of items	Relevant	Clarity	Essential	Interpretation	Essential CVR	Interpretation
Section A - Personal Information	12	0.906	0.969	0.927	Acceptable	0.854	Acceptable
Section B - Anthropometry Measurement (Weight, Height, Waist Circumference and Blood Pressure Measurement	4	1	1	1	Acceptable	1	Acceptable
Section C - Medical History	13	0.942	0.952	0.942	Acceptable	0.885	Acceptable
Section D – Smoking Habits	7	0.857	0.946	0.857	Acceptable	0.714	Acceptable
Section E – Alcohol Intake	4	0.875	0.875	0.906	Acceptable	0.813	Acceptable
Section G – Knowledge	10	0.950	0.950	0.950	Acceptable	0.900	Acceptable
Section G – Attitude	10	0.963	0.9625	0.963	Acceptable	0.925	Acceptable
Section G – Practice	10	0.938	0.975	0.988	Acceptable	0.975	Acceptable
Section H – Understanding Toward Monosodium Glutamate (MSG)	5	0.975	0.925	0.975	Acceptable	0.95	Acceptable
Section I – Attitude toward Monosodium Glutamate (MSG)	5	0.925	0.950	0.950	Acceptable	0.900	Acceptable
Section J – Discretionary Salt Intake	3	1	1	1	Acceptable	0.917	Acceptable
Section M – Interest in reducing salt intake	1	1	1	1	Acceptable	1	Acceptable
Section M – Characteristics and behaviours of salt reduction	13	0.981	1	0.981	Acceptable	0.962	Acceptable
Section M – Responsibility for salt reduction	7	1	1	1	Acceptable	1	Acceptable
Section M – Communication preferences	3	0.958	0.958	0.958	Acceptable	0.917	Acceptable
Section N – Self-Efficacy	10	0.9125	0.975	0.938	Acceptable	0.875	Acceptable
Section O – Food Purchase Behaviour	14	1	1	1	Acceptable	0.982	Acceptable
Section P – Willingness to Purchase Low Salt Food Products	7	0.946	1	0.946	Acceptable	0.893	Acceptable
Average S-CVI		0.952	0.963	0.957			

Face Validity Results of Salt@Home Questionnaire

The quantitative analysis was implemented by calculating the FVI rating of all sections. Based on the compilation of (23) depending on the number of respondents, the acceptable FVI value differs respectively. The suitability value for the face validity index is at a of minimum 0.83 for those having ten face validity respondents, which reflects this study. Thus, each of the 18 questionnaire subheading sections, was deemed to have acceptable FVI values within 0.83 value or more. Table 2 shows the FVI value regarding relevance, and clarity, including essentialness for the factors as well as their acceptable interpretation.

Table II : Face Validity Data

Questionnaire Sections	Number of items	Relevant	Clarity	Essential	Interpretation
Section A - Personal Information	12	1	1	1	Acceptable
Section B - Anthropometry Measurement (Weight, Height, Waist Circumference and Blood Pressure Measurement	4	0.900	0.800	0.800	Acceptable
Section C - Medical History	13	1	1	1	Acceptable
Section D – Smoking Habits	6	0.900	1	1	Acceptable
Section E – Alcohol Intake	4	0.900	1	1	Acceptable
Section G – Knowledge	10	1	1	1	Acceptable
Section G – Attitude	10	1	0.900	0.900	Acceptable
Section G – Practice	10	1	0.900	0.900	Acceptable
Section H – Understanding Toward Monosodium Glutamate (MSG)	5	0.900	1	1	Acceptable
Section I – Attitude toward Monosodium Glutamate (MSG)	5	0.900	0.900	1	Acceptable
Section J – Discretionary Salt Intake	3	0.900	0.800	1	Acceptable
Section M – Interest in reducing salt intake	1	1	1	1	Acceptable
Section M – Characteristics and behaviours of salt reduction	13	1	1	1	Acceptable
Section M – Responsibility for salt reduction	7	1	1	1	Acceptable
Section M – Communication preferences	3	1	1	1	Acceptable
Section N – Self-Efficacy	10	0.900	1	1	Acceptable
Section O – Food Purchase Behaviour	14	1	0.986	0.986	Acceptable
Section P – Willingness to Purchase Low Salt Food Products	7	1	1	1	Acceptable
Average S-FVI		0.961	0.960	0.977	

According to Table 2, the relevance, clarity, and essentialness of the FVI values for the 10 respondents are all considered to be within the acceptable range value based on (23), the acceptable FVI values for 10 respondents are to be at least 0.83. The relevant FVI values varied from 0.9 to 1 with the average relevant S-FVI being 0.961. The clarity FVI values varied from 0.8 to 1 with the average clarity S-FVI being 0.960. The essential FVI values varied from 0.8 to 1 with the average essential S-FVI being 0.977.

Cronbach's Alpha results of Salt@Home Questionnaire
There are several interpretations of Alpha Cronbach data ranging from excellent to unacceptable, whereby it is relevant only to scaled questions. Therefore, only certain sections undergo statistical analysis for Cronbach's Alpha which are based on the results obtained in Table 3 from Cronbach's Alpha regarding relevant sections are, Section G Knowledge 0.830 (Good), Section G Attitude 0.815 (Good), Section G Practice 0.518 (Poor), Section H Understanding Toward Monosodium Glutamate (MSG) 0.708 (Acceptable), Section I Attitude toward Monosodium Glutamate (MSG) 0.653 (Questionable), Section J – Discretionary Salt Intake 0.876 (Good), Section M Characteristics and behaviours of salt reduction 0.825 (Good), Section M Characteristics and behaviours of salt reduction 0.747 (Acceptable), Section M Responsibility for salt reduction 0.827 (Good), Section N Self-Efficacy 0.929 (Excellent), Section O Food Purchase Behaviour 0.701 (Acceptable), Section O Food Purchase Behaviour 0.540 (Poor), Section P Willingness to Purchase Low Salt Food Products 0.854 (Good). Therefore, the highest Cronbach's Alpha values were the section self-efficacy with an excellent value of 0.929, followed by discretionary salt intake (Good - 0.876) and inclination to buy low-salt food items (Good - 0.854). Nevertheless, the section with lower Cronbach's Alpha values obtained was the attitude towards monosodium glutamate (Questionable - 0.653), food purchase behaviour (Poor - 0.540), and practice in dietary salt intake (Poor - 0.518).

Table III : Cronbach's Alpha Data

Questionnaire Sections	Number of items	Cronbach's Alpha	Internal consistency
Section G – Knowledge	10	0.830	Good
Section G – Attitude	10	0.815	Good
Section G – Practice	10	0.518	Poor
Section H – Understanding Toward Monosodium Glutamate (MSG) (Q3, Q4, Q5)	3	0.708	Acceptable
Section I – Attitude toward Monosodium Glutamate (MSG)	5	0.653	Questionable
Section J – Discretionary Salt Intake	3	0.876	Good
Section M – Characteristics and behaviours of salt reduction Q4	9	0.825	Good
Section M – Characteristics and behaviours of salt reduction Q5	2	0.747	Acceptable
Section M – Responsibility for salt reduction Q6	7	0.827	Good
Section N – Self-Efficacy	10	0.929	Excellent
Section O – Food Purchase Behaviour	11	0.701	Acceptable
Section O – Food Purchase Behaviour	3	0.540	Poor
Section P – Willingness to Purchase Low Salt Food Products	7	0.854	Good

Most of the questionnaire items were within the adequate and common Cronbach's Alpha range to be above 0.7 (30). Although certain items were considered poor in terms of their internal consistency value (Section G Practice and Section O Food Purchase Behaviour) as it is not less than 0.5 and considered moderate reliability as it is still within the value of 0.5 to 0.7, thus it will not be excluded from the questionnaire (31).

Discussion

This study illustrated the psychosocial factors of knowledge, attitude, practice, self-efficacy, and barriers as well as dietary factors such as diet and monosodium glutamate usage, which can be measured and associated with dietary salt intake. Currently, there are no standardized questionnaires for most of the factors mentioned whereby in this research the factors of smoking habits and alcohol consumption were partially adopted and modified by WHO questionnaires (partially adopted from WHO). Furthermore, knowledge, attitude, and practice regarding salt intake were created utilising the established and revised MySalt 2015 and MyCoSS Knowledge, Attitude, Practice including (32–36). This also includes Self-Efficacy (17,18), Food Purchase Behaviour, and Willingness to Purchase Low Salt Food Products (13,15,20,37). On the other hand, understanding toward Monosodium Glutamate and Attitude toward Monosodium Glutamate were fully adopted by (21) including Discretionary Salt Intake and Barriers to Reducing Salt Intake (16). In addition, although certain sections of the questionnaire were fully adopted from studies, it has not been fully validated with all validity analyses measured in this study.

Thus, the current research presents quantitative criteria for a new questionnaire content validity and describes the psychometrics and instrument design phases for assessing salt consumption. It should be noted that validation is a drawn-out procedure. As a first stage, the examination of the questionnaire for content validity with reliable numbers of experts recruited including face validity was very important. After that, reliability assessments such as the internal consistency test (Cronbach's Alpha) were conducted with moderate to excellent values obtained. Consequently, this research used a significant participant size that accurately represented the experts recruited in the content validity. Due to the sample size, content validity analysis was suitable and produced significant factors with strong alpha scores and correlation.

The Cronbach's Alpha coefficients that have been reported range between 0.52 to 0.93. This suggests that certain areas are reliable, and although the questions can still be accepted after amendments, those with lower values are questioned. Some of the possible causes of decreased reliability in certain sections could be due to varying features of interpreting questions and responses of the respondents as well as the target population itself. This is because the similarities of the respondents depict similar answers, whereas individualised characters, such as expert panels, in the target population could greatly affect the reading of the results, which in this case could be further exacerbated due to the nature of Cronbach alpha analysis. This illustrates how Cronbach alpha can only be seen as a measure of a scale or instrument's relevance to a specific sample of respondents, not of the scale or instrument itself. However, these problems may be fixed in subsequent versions as clarification in understanding the questions and removing specific questions that greatly affect the readings are some of the few methods to ensure reliable results (38).

Conclusion

The method of content validity analysis is two-staged, systematic, and subjective. Instrument design is completed in the first stage, and judgment and quantification of instrument items are completed in the second stage while experts examine the coherence of theoretical and practical definitions. To ensure instrument dependability and create a viable questionnaire regarding content for the initial trial stage, such a method should be the primary research in the instrument-making process. Content validity should be researched as the initial stage in the lengthy process of validation. Evaluations of reliability (by internal consistency were also prioritised. While content validity is an individualised assessment, it is feasible to be objectively measured and quantified.

Overall, the study of content validity demonstrated that the questionnaire has a suitable degree of content validity. The instrument's overall content validity index was high when using the average method, but it can still be recommended due to the large number of content panellists who make consensus challenging and the high S-CVI value, with CVR value to be above the minimum range. The Cronbach's Alpha coefficients for all 18 sections falling within the moderate to excellent range. Therefore, after consideration, this questionnaire can be used for future studies regarding psychosocial and nutritional factors of dietary salt intake.

Study Limitation and Strengths

The literature has demonstrated that these previous factors were particular in their studies however, it did not consider other variables whether dietary or behavioural, and their association with salt consumption. Furthermore, the sections included in the questionnaire are designed from the perspective of both individual levels of salt intake and at the household level as well relative to certain sections. In addition, it was developed with the intent of conducting future research in Malaysia as it was translated into both English and the local language Malay through back-to-back translations and checked for the accuracy of the translation. Thus, it is strengthened in mind with large, household samples and applied with a combination of nutritional science, behavioural science techniques, and epidemiology to salt reduction, resulting in a holistic nutritional approach.

There are limitations to validity studies as expert evaluations are subjective, and the research is susceptible to any bias that occurs during the content validity. However, as various comments are suggested by the experts, it can assist in defining the scope content of the questionnaire—especially, the face validity among the respondents. If the respondent is aware of the details seeking from the face validity, the respondents may attempt to bend and mould the responses to fit the perception that they believe the researchers are seeking – whether it may be positive or negative. Future studies should be implemented on better usage of the questions for a higher value of Cronbach's Alpha internal consistency. However, the factors assessed are anticipated to be comparatively constant and thus relevant to dietary salt intake and salt reduction. An association would be predicted between the psychosocial and nutritional factors regarding salt intake.

Study Implications and Suggestions for Future Study

Further research on this study would provide potential benefits to the scientific community regarding household salt intake as the Salt@Home method requires no laboratory analysis, and the information needed is simple and understandable by non-professionals. The fundamental essence of the Salt@Home method is a "determine but simple" technique which could evoke awareness of high-salt intake as well as help evaluate salt intake in various upcoming trials on high-salt intake-induced diseases. The data collection required by the

Salt@Home method is effortless with a low participant burden and has a high chance for completeness and compliance of the data.

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