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CONTENT VALIDITY BY EXPERT JUDGMENT OF AN INSTRUMENT TO MEASURE KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING SALT CONSUMPTION IN THE POPULATION OF PERU

VALIDEZ DE CONTENIDO POR JUICIO DE EXPERTOS DE UN INSTRUMENTO PARA MEDIR CONOCIMIENTOS, ACTITUDES Y PRÁCTICAS SOBRE EL CONSUMO DE SAL EN LA POBLACIÓN PERUANA

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ABSTRACT

Introduction: Given the high consumption of salt in the population, there is a need to have a validated tool that measures the knowledge, attitudes, and practices of salt consumption (CAP-salt). **Objective:** To validate the CAP-salt questionnaire. **Methods:** Psychometric study of content validity through expert judgment. A total of five physicians from different specialties were counted. To calculate the degree of agreement between the expert judges, Aiken's V was used as the decision criterion to keep an item; a value ≥ 0.7 was considered. **Results:** To clarify, V values greater than 0.80 were presented, in addition to a variation coefficient of less than 25%; therefore, none of the items was eliminated. Regarding coherence, they presented a coefficient of variation above 20% and V values greater than 0.71, confirming the decision not to exclude any of them. Regarding the relevance of the items, V values higher than 0.90 were also evidenced, and neither did any of them present a value below the critical one. **Conclusions:** The questionnaire has presented sufficient evidence of content validity in terms of clarity, coherence, and relevance of the items through the analyses mentioned above. For this reason, it should be used to quantify the CAP-salt of different population groups in the country.

Keywords: Validation study; specialization; sodium chloride; Surveys and questionnaires; Peru. (Source: MeSH NLM).

RESUMEN

Introducción: Ante el alto consumo de sal en la población, surge la necesidad de contar con una herramienta validada que mida los conocimientos, actitudes y prácticas del consumo de sal (CAP-sal). **Objetivo:** Validar el cuestionario de CAP-sal. **Métodos:** Estudio psicométrico de validez de contenido a través de juicio de expertos. Se contó un total de cinco médicos de diferentes especialidades. Para calcular el grado de acuerdo entre los jueces expertos se utilizó la V de Aiken como criterio de decisión para mantener un ítem, se consideró un valor ≥ 0,7. **Resultados:** En relación a la claridad, se presentaron valores V superiores a 0,80, además, de un coeficiente de variación menor a 25%, por tanto, ninguno de los ítems fue eliminado. Con respecto a coherencia, presentaron un coeficiente de variación por encima del 20% y valores V superiores a 0,71, confirmando la decisión de no excluir alguno de ellos. Sobre la relevancia de los ítems, se evidenció también valores V superiores a 0,90 y tampoco presentó alguno un valor por debajo del crítico. **Conclusiones:** El cuestionario ha presentado suficientes evidencias de validez de contenido en claridad, coherencia y relevancia de los ítems a través de los análisis antes mencionados. Por eso mismo, debería ser utilizado para cuantificar el CAP-sal de diferentes grupos poblacionales del país.

Palabras Clave: Estudio de validación; Especialización; Cloruro de Sodio; Encuestas y Cuestionarios; Perú. (Fuente: DeCS BIREME).

INTRODUCTION

Excessive sodium intake is a major public health problem. High salt intake causes more than 1.65 million deaths from cardiovascular events worldwide [1]. This is because it is associated with high blood pressure (HTN), strokes, heart disease, and some types of cancer [2,3].

Although the world health organization recommends not consuming more than 2 grams of salt per day [4], a study carried out in 18 countries found that only 0.2% of the population had a sodium intake of less than 2.3 grams/day [5]. In Latin America and the Caribbean, a systematic review concluded that the average combined sodium consumption estimated in 24 hours was 4.13 grams/day [6]. In Peru, using 24-hour urine samples from a population-based study in a semi-urban area, an average sodium content of 4.4 grams/day was reported [7].

Faced with this problem, government programs have been formed that seek to build effective strategies to reduce salt consumption in the diet. For this, the collection of epidemiological data and the evaluation of knowledge, attitude and practice regarding salt consumption (CAP- salt) in the target populations [8,9].

Despite these recommendations, in the Latin American region, there is not only a lack of studies on CAP-salt, but also a validated questionnaire that measures it [10]. For this reason, the validation of the instrument guarantees a useful tool to be used in research that requires this type of evaluation. Thus, the objective of this study is to validate the CAP-salt questionnaire in the Peruvian population.

METHODS

Design Psychometric study

Of content validity through expert judgment. The information collection process was carried out in the period from October to December 2021.

Population and sample

The population was made up of five medical professionals with a specialty in internal medicine and nutrition. For the selection of expert judges, aspects of academic training, research, and previous experience as judges in validation studies [10,11], as detailed in Table 1.

Table 1. Profiles of each expert judge

Expert 1	Medical Surgeon, Master's degree in nutrition
Expert 2	Surgeon, Anesthesiology specialist
Expert 3	Surgeon, Internal medicine specialist
Expert 4	Doctor of Medicine degree
Expert 5	Surgeon

Instrument

The CAP-salt questionnaire was developed by Grimes et al. [12]. This questionnaire was originally developed in Australia, in the English language. It has three blocks: 1) knowledge of salt made up of seven questions, 2) attitudes towards salt consumption made up of four questions; and 3) practices on salt with five questions. The instrument has dichotomous, polytomous, and selection response options.

multiple with a single answer [13].

The questionnaire was submitted to the translation process by a translator from the team of the Institute of Biomedical Sciences of the Ricardo Palma University (INICIB-URP), into Spanish and subsequently retranslated to analyze whether the items maintained the purpose for which they were elaborated [12]. Figure 1

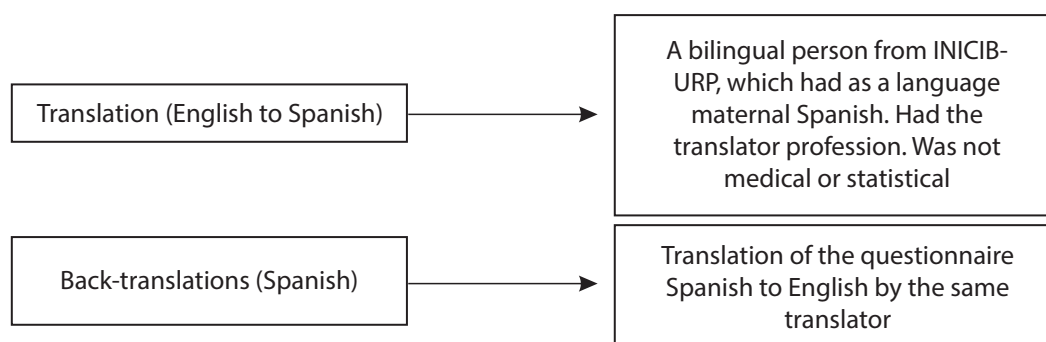| Translation (English to Spanish)	→	A bilingual person from INICIB-URP, which had as a language maternal Spanish. Had the translator profession. Was not medical or statistical
Back-translations (Spanish)	→	Translation of the questionnaire Spanish to English by the same translator

Figure 1. Questionnaire translation process

One of the most applied strategies to calculate evidence of content validity of an instrument is to submit it to expert judgment [15-18]. The task of the judges is to evaluate the content of the items; for the evaluation of the instrument, the evaluation of each item was carried out through the Expert Judgment template [19], which includes the analysis through three indicators to be evaluated: clarity, coherence, and relevance, whose rating is given through six response options to eliminate the intermediate position and obtain more reliable responses [20-22]. Clarity refers to the syntax and semantics of each item. Coherence evaluates if the item has a logical relationship with the indicator or dimension that it is measuring. Relevance estimates whether the item is essential to measure the indicator. Sufficiency assesses whether the set of defined items is sufficient to measure a dimension.

In addition, each expert judge completed the validation certificate. They fully evaluated the assessments related to the unity of the items, the breadth of the content, and the relevance of the original instrument.

Procedure
The data obtained was stored in Microsoft Excel. The content validity coefficient using Aiken's V was calculated through the application developed by Merino and Livia [23], the same one that provides confidence intervals using the scoring method. The calculation of the exact critical value of Aiken's V was obtained with the formula proposed by Aiken [24].

Statistical analysis
To calculate the degree of agreement among the expert judges, Aiken's V was used. This coefficient presents values ranging from 0.00 to 1.00, where the value of 1.00 would indicate the maximum agreement among the judges in the contents. Evaluated. The calculation of the Aiken V coefficient takes into account the average of the grades, the minimum possible score, and the range

of possible scores. For the purposes of controlling the sampling error, it is important to specify the range of possible values that the coefficient would assume using the intervals of trust [25].

The analysis of the items was carried out based on the opinions of the expert judges and the results of Aiken's V according to the semantic adaptation guidelines found in the guidelines for the translation and adaptation of the tests [14].

As a decision criterion to keep an item, a value of 0.7 was considered for the lower limit of the confidence interval and 1 for the upper limit [26], a coefficient of variation less than 25%, or that at least two judges request the exclusion of the question.

Ethical aspect
The participation of each expert was voluntary and was accepted with the signing of the informed consent. Likewise, it had the approval of the Research Ethics Committee of the Faculty of Human Medicine of the Ricardo Palma University, number PI-007-2021.

RESULTS
General quantitative analysis
The global evaluation of the questionnaire showed that Aiken's V coefficient in the aspects of clarity, relevance, and sufficiency reached values higher than 0.80.

Specific quantitative analysis
Table 2 reports the results on the clarity of the items quantified using Aiken's V coefficient. As can be seen, the items obtained favorable evaluations on clarity, presenting V values greater than 0.80, a critical value less than 0.7, in addition to a coefficient of variation less than 25%; therefore, none of the items He was removed.

Table 2. Mean, standard deviation, coefficient of variation, Aiken's V and confidence interval of the relevance of each question - Clarity

	Mean	SD	CV	Aiken's V	95% CI
Ítem 1	5.60	0.89	15.97	0.92	0.75-0.98
Ítem 2	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 3	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 4	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 5	5.60	0.89	15.97	0.92	0.75-0.98
Ítem 6	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 7	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 8	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 9	5.60	0.89	15.97	0.92	0.75-0.98
Ítem 10	5.60	0.89	15.97	0.92	0.75-0.98
Ítem 11	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 12	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 13	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 14	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 15	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 16	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 17	5.60	0.89	15.97	0.92	0.75-0.98

SD: standard deviation; 95% CI: 95% confidence interval

Considering the coherence parameter, Table 3, it should be noted that the items obtained Aiken's V coefficient values above the established lower critical value of 0.71, and also presented a coefficient of variation of above 20%, which would confirm the decision not to exclude any of them.

Table 3. Mean, standard deviation, coefficient of variation, Aiken's V and confidence interval for the relevance of each question – Coherence

	Mean	SD	CV	Aiken's V	95% CI
Ítem 1	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 2	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 3	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 4	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 5	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 6	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 7	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 8	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 9	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 10	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 11	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 12	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 13	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 14	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 15	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 16	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 17	5.60	0.55	9.78	0.92	0.75-0.98

SD: standard deviation; 95% CI: 95% confidence interval

Table 4 reports the results on the relevance of the items calculated using the Aiken V coefficient, the results shown show favorable indices in the calculation, which added to optimal values in the coefficient of variation support the decision to include them in the final instrument.

Table 4. Mean, standard deviation, coefficient of variation, Aiken's V and confidence interval for the relevance of each question – Relevance

	Mean	SD	CV	Aiken's V	95% CI
Ítem 1	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 2	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 3	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 4	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 5	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 6	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 7	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 8	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 9	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 10	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 11	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 12	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 13	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 14	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 15	5.80	0.45	7.71	0.96	0.80-0.99
Ítem 16	5.60	0.55	9.78	0.92	0.75-0.98
Ítem 17	5.80	0.45	7.71	0.96	0.80-0.99

SD: standard deviation; 95% CI: 95% confidence interval

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DISCUSSION

Main findings
In general, it has been suggested that the use of unreliable and unvalidated questionnaires to measure knowledge about nutrition is responsible for the inconsistencies observed in the relationships between knowledge and eating behaviors[27].

The findings demonstrated the validation process of the CAP-salt instrument presents evidence of content validity through expert judgment with positive Aiken V values in the categories analyzed, these being clarity, coherence, and relevance [17,23,24].

Comparison with other studies
This questionnaire is the first to analyze consumer attitudes, knowledge, and behavior related to salt consumption in developing countries. Similar studies have been carried out in developed countries such as Australia [12,28]., Ethiopía[29], Canadá [30] y Kazakhstan [31]. These political and interested parties responsible reinforce the importance of knowing the phenomenon to be able to implement strategies on responsible consumption of it.

In the process of construction and/or adaptation of a measurement instrument, content validity represents the first level of evidence of validity on the content of a test and the construct that is intended to be measured. The content refers to the topic, writing, format, and presentation of the items or questions of the instrument [13,18].

This questionnaire is not measured in a sum of values about whether the person has high or low knowledge, attitude or practice, so it does not work in a dichotomous or even polytomous manner (with three answers). In this way, the way in which it should be handled is through each question individually and to be able to make comparisons between other variables of interest, such as gender, and the presence of some comorbidity, among others.

Significance for public health
Excessive consumption of sodium in the diet is a major public health problem both nationally and internationally. Therefore, because for monitoring and providing reliable information toinvolved in the initiatives to reduce this, it is necessary to have a tool that allows me to measure the CAP-salt in the population.

Knowing the goals that experts set for salt intake can help consumers make better-informed decisions when buying processed foods and be more mindful and sensitive when cooking or eating. A better understanding of the relationship between salt and sodium can also make understanding nutrition information on food labels easier. In itself, knowing the CAP-salt can help consumers make better-informed decisions when buying processed foods and be more aware and sensitive when cooking or eating.

Strength and limitations

The strengths of our study are the inclusion of experts from different specialties of human medicine, with the aim of obtaining different points of view. Second, this questionnaire has been validated so that Peruvians could take it from different parts of the country, which gives it heterogeneity for the use of this tool. Third, since the questionnaire includes only 16 questions, it requires little time and effort on the part of the people taking it.

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Among the study's limitations were the choice and availability of the judges, specialists, and translators and the organization of the time allocated to the validation process. Second, since the study is only focused on the Peruvian population, the results may not be generalizable to other countries, particularly in countries with different behaviors and dietary patterns and, therefore, different sources of food consumption. sodium. The INICIB-URP work team has future work underway to explore the factorial validity of the questionnaire in various populations.

CONCLUSIONS

The questionnaire of knowledge, attitudes and practices on the consumption of salt translated to our environment through the inverse translation justifies the quality of the adjustment of the items, the validity indicators based on the content represented through the Aiken's V coefficient (> 0.70), show that the instrument presents evidence of content validity in terms of clarity, coherence and relevance of the items.

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