

Food safety and the use of regional foods: the validation of a serial album*

SEGURANÇA ALIMENTAR E USO DE ALIMENTOS REGIONAIS:
VALIDAÇÃO DE UM ÁLBUM SERIADO

SEGURIDAD ALIMENTARIA E INGESTA DE ALIMENTOS REGIONALES:
VALIDACIÓN DE UN ÁLBUM SERIADO

Mariana Cavalcante Martins¹, Joelna Eline G.L.F. Veras², Janaiana Lemos Uchoa³, Patrícia Neyva da Costa Pinheiro⁴, Neiva Francenely da Cunha Vieira⁵, Lorena Barbosa Ximenes⁶

ABSTRACT

The objective of the study was to validate the content and appearance of a serial album created for the promotion of food safety and utilizing regional foods. This methodological study was performed with 12 judges between April and June of 2010, who analyzed pictures and discussion cards from the serial album in terms of the appearance (clarity/comprehension) and content (relevance) validity. Regarding the appearance validation of the pictures, clarity and comprehensibility ranged between 83.3% and 100%; regarding the discussion cards, 91.6% of the judges considered them to be comprehensible. The Global Content Validity Index was 0.95 for the pictures and 0.98 for the discussion cards. Therefore, the serial album is considered to be a valuable new educational tool, validated for use by nursing professionals in child care and aiming at the promotion of children's health.

DESCRIPTORS

Food habits
Food security
Teaching materials
Nursing care
Validation studies

RESUMO

O objetivo deste estudo foi validar o conteúdo e a aparência de um álbum seriado para a promoção da segurança alimentar por meio da utilização dos alimentos regionais. Trata-se de pesquisa metodológica, realizada com doze juízes no período de abril a junho de 2010, analisando figuras e fichas-roteiros do álbum seriado quanto à validade de aparência (clareza/compreensão) e de conteúdo (relevância). Em relação à validação de aparência das figuras, a clareza e a compreensibilidade variaram entre 83,3% e 100%; e, em relação às fichas-roteiros, 91,6% dos juízes julgaram ser compreensíveis. O Índice de Validade de Conteúdo global das figuras foi 0,95 e o das fichas-roteiros foi de 0,98. Dessa maneira, o álbum seriado pode ser considerado uma nova ferramenta educativa e está validado para ser utilizado pelo profissional de enfermagem durante a consulta de puericultura para promoção da saúde infantil.

DESCRITORES

Hábitos alimentares
Segurança alimentar e nutricional
Materiais de ensino
Cuidados de enfermagem
Estudos de validação

RESUMEN

El objetivo de este estudio fue validar el contenido y la apariencia de un rotafolio para la promoción de la seguridad alimentaria mediante la utilización de alimentos regionales. Investigación metodológica, con doce evaluadores, realizada entre abril y junio de 2010, analizando figuras y fichas-guión del álbum seriado respecto a la validez de apariencia (claridad/compreensión) y de contenido (relevancia). En lo referente a la validación de apariencia de las figuras, la claridad y comprensibilidad varió entre 83,3% a 100%; y en relación a las fichas-guión, 91,6% de los evaluadores las calificaron como comprensibles. El Índice de Contenido Global de las figuras fue 0,95 y el de las fichas-guión de 0,98. De tal manera, el álbum seriado puede considerarse una nueva herramienta educativa, que está validada para ser utilizada por el profesional de enfermería durante la consulta de puericultura para la promoción de salud infantil.

DESCRIPTORES

Hábitos alimenticios
Seguridad alimentaria
Materiales de enseñanza
Atención de enfermería
Estudios de validación

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INTRODUCTION

Food security can be defined as a universal right to have regular and permanent access to quality food in sufficient quantity without compromising access to other essential needs. At its base are food practices which promote good health, respect cultural diversity and that are socially, economically and environmentally sustainable⁽¹⁾.

Rural communities often produce a wide variety of foods (fruit, vegetables, tubers and legumes, among others) that can easily be incorporated into a family's diet. This is because they possess several fundamental characteristics such as providing easy access, low cost and high nutritional value⁽²⁾. However, many of the foods that were commonly consumed in the past, such as fruits, vegetables etc., are being replaced by industrial products that are high in fats and sugars. This is due to their easy access and changes in eating habits encouraged, in part, by the media.

The quality of food offered to preschool children has repercussions throughout their lives and is essential for ensuring a healthy weight and preventing anemia. Thus, providing guidance to families concerning a healthy diet, from the first years of a child's life, is essential in order to ensure food security and the nutritional status of a population. Respect for local food and the regions' cultural identity is also paramount⁽³⁾.

Nurses working in primary care, concerned with health promotion and the prevention of health problems in the community, can use educational technologies to raise awareness and help families to adopt healthy behaviors in order to improve their quality of life⁽³⁾.

To this end, we prepared a set of discussion cards entitled, *Promoting food security with regional foods*. The objective was to stimulate a process of reawakening dormant knowledge with regards to the food choices of families with preschool children (three to six year-olds) living in rural areas.

The discussion cards were produced against the backdrop of a scarcity of educational material on the use of regional foods and were considered to be a helpful educational tool for nurses. In their role as educators, nurses can work together with rural families to discuss how these foods can be correctly used in their daily lives.

As visual tools for use in classes, lectures, demonstrations etc., discussion cards are useful because they basically consist of illustrations and scripts. The former should be simple, attractive and reflect reality and can take the form of photographs, pictures or any other material related to the theme. As for the latter, they ought to include large print titles and contain only the key points, made use of simple words and sentences, which are easily accessible to the target audience. Best practice suggests that we do not stick to what is represented in the discussion cards, but go beyond this to drive home the important points⁽⁴⁾.

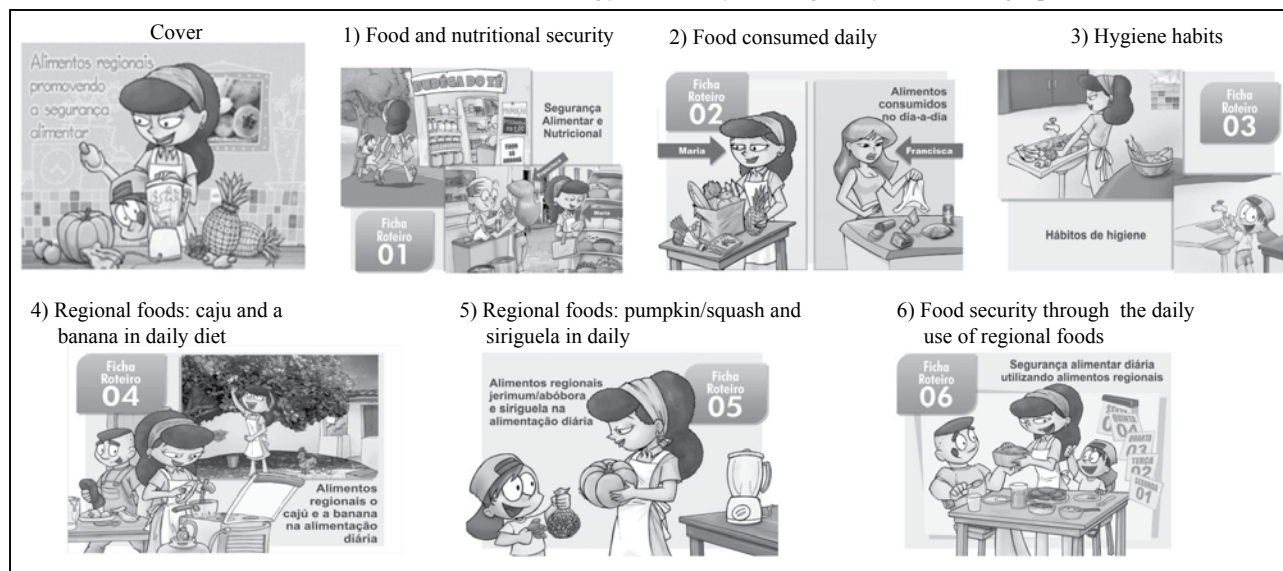
Discussion cards are used to guide group discussion and to encourage the practice of action-reflection-action. In doing so, they provide a way to bring together the knowledge and practices of the participants resulting from their individual experiences, thereby raising their critical consciousness. Paulo Freire⁽⁵⁾, in his educational model, suggests that illustrations should be codified with local situations. With the assistance of a facilitator, the discussion cards should enable the group to decode these elements and, in doing so, lead to an analysis of the issues, encouraging further debate and a keener awareness of the topic.

In this study, we chose to use Paulo Freire's method of education as a practice of freedom⁽⁵⁾, to guide us in the production of these discussion cards. With regards its structure, we followed four of his five stages of literacy process. The first phase deals with *determining a common vocabulary*, a task already undertaken in previous research. In the second phase, we *selected words from the common vocabulary* related to perceptions, beliefs, feelings, and difficulties, among others. The third phase consists of *creating existential situations* from photographs of local reality together with all of the graphical representations. These should be based on typical problems or situations that the participants come across, thus favoring the educational process. Finally, in the fourth phase we *produced example scripts* in order to help coordinators to stimulate debate among the audience and give direction to the discussion. Reading these scripts by breaking down words into their phonemic families, Freire's fifth stage was not undertaken, as it did not fit the purpose of the cards.

The discussion cards show seven illustrations and five scripts, see Picture 1.

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Picture 1 – Illustrations from the discussion cards: *Promoting food security with regional foods*. Maranguape, CE, 2009



Despite discussion cards being well known for their effectiveness in health education, it was deemed necessary to assess the appearance and content of our discussion cards' illustrations and scripts before they were used by the Family Health Strategy (FHS) professionals. This testing process aimed to validate the discussion cards, demonstrating scientifically how appropriate the material is in relation to the purpose for which it was created⁽⁶⁾.

This study is relevant because it was able to validate the discussion cards, *Promoting food security with regional foods* and, in doing so, provided a new educational tool for nurses. With it, health professionals can develop education strategies to work with families of preschool children in rural areas. The aim is to encourage a better understanding of regional foods and promote their use due to their ready supply and affordability.

In addition, nurses can use this tool during consultations, which are part of the Family Health Strategy (FHS) working from the perspective that including regional foods into a family's diet could positively influence the nutrition of many children, reducing nutritional deficiencies and improving food and nutrition security for all members of the family.

This study's objective was to work with healthcare professionals to validate the content and appearance of the discussion cards *Promoting food security with regional foods*.

METHOD

Our study can be defined as *methodological* in that it sets out to evaluate and refine a tool or strategy that can enhance a particular methodology. Such research should be concerned with obtaining, organizing and analyzing data and deal with the development, validation and assessment

of research techniques, tools or educational resources⁽⁶⁾. In keeping with this, the study evaluates, improves and validates discussion cards on how regional foods can support food security. The discussion cards provide nurses in the Family Health Program with a learning tool for use with families of preschool children who live in rural areas.

We used a number of theoretical sources to inform the design and construction of the discussion cards, *Promoting food security with regional foods*. These were: the book *Education as the Practice of Freedom*, by Paulo Freire⁽⁴⁾; the manual - *Brazilian Regional Food*, prepared by the Ministry of Health⁽⁷⁾; the FAO report - *The State of Food Insecurity in the World*⁽⁸⁾; and an earlier study on regional foods, carried out in the same community but with a different target group, which was conducted through interviews on dietary habits⁽⁹⁾.

In addition, we used a bank of photographs, which depicted local reality and common scenes in the community in order to faithfully portray the participants' reality. Armed with this material, we hired a specialist in graphic design who edited the illustrations using the Corel Draw program. This graphic designer provided support in creating the illustrations, throughout innumerable meetings in order to ensure that the illustrations were conducive to our purpose. The results were some discussion cards organized as follows: each card contains an illustration - which faces the group, and a script - which faces the health professional.

Once the discussion cards were complete, it was necessary to validate them by consulting a committee of experts (judges) who came from a variety of backgrounds and had differing levels of prior knowledge in the field. They were tasked with analyzing whether the discussion cards had met their objectives in terms of content, scope and representation, and give feedback on what should be maintained, revised or eliminated⁽¹⁰⁾.

To establish the number of judges necessary for this step, we followed the recommendations of a study⁽¹¹⁾, which suggested that the ideal number was between six and twenty individuals. A minimum of three judges from each group of selected professionals was recommended.

In this study, the panel of experts (judges) who agreed to participate in the study was divided into two distinct groups. Group 1 consisted of 12 well-respected nurses specialized in primary care, working in the Family Health Strategy in a rural area in Ceará, Brazil. They all met the inclusion criteria of having graduated in Nursing and having at least one year of experience in the Family Health field. We chose to consult the largest possible number of participants for this group, representing as they did the individuals who would use the discussion cards⁽¹²⁾. Group 2 was made up of five professors (either masters or doctors) from universities in the urban area of Fortaleza, CE, Brazil. They were all experts in the field of Health Education and Child Health and possessed knowledge about the methodological construction of questionnaires or scales.

However, for both groups, the intentional choice of the participants meant they were non-probability samples⁽¹²⁾. This happens when researchers are interested in a particular group, such as university professors in this case, rather than achieving a representative sample.

Data collection was carried out from April to June 2010, and conducted according to a study on validation, which suggests providing the experts with the following documents⁽¹³⁾: 1. Invitation letter; 2. Text on the concept of food security; its importance for rural preschool children's growth and development and the importance of validating the discussion cards for further dissemination and use within the community; 3. Checklist for the validation of illustrations and scripts in addition to guidance on how to fill out the form; 4. Judge Personal profile questionnaire; 5. Free and informed consent forms.

Judges were asked to consider three aspects (clarity and understanding, relevance and association) and were given the opportunity to make suggestions in answer to an open question at the end of the checklist. They were asked to assess seven illustrations (F - F1, F2, F3, F4, F5, F6 and F7) and five scripts (R, R1, R2, R3, R4 and R5).

In order to validate the appearance of the discussion cards⁽¹⁴⁾, judges were asked to evaluate the clarity and understandability of both the illustrations and the text, using the following response options: confusing, unclear and clear. With regard to content validity⁽⁶⁾, both of the illustrations and the scripts were judged on their degree of relevance, with the response options: irrelevant, not very relevant, relevant and very relevant. In addition to this, the discussion cards were analyzed for association criteria and the feasibility of its use in professional practice (with yes/no options). Finally, we added a space for the comments and suggestions of judges on modifications in the case that the illustrations and scripts did not meet the purpose for which they were built.

To facilitate our analysis, we redefined the options dealing with the validity of the discussion cards' appearance (clarity and understanding) in numerical form: confused, unclear and clear equivalent to -1, 0 and +1 respectively. Judges' answers could thus vary from -1 to +1 and thus the closer to +1, the greater the level of agreement among them. This in turn represents a high level of relevance and / or acceptance of the item assessed. For items with mean scores less than +1, the item was adapted and content accepted, with no need for reassessment by the judges.

To examine the validity of the discussion cards, its illustrations and scripts, we used the Content Validity Index (CVI)⁽⁶⁾, using three mathematical equations. The equation I-CVI calculates the average values for each item separately, i.e. it sums all the separately calculated CVI data and divides this by the number of items considered in the assessment. The S-CVI/UA equation calculates the number of items in a scale that reach the scores of 3 (relevant) and 4 (very relevant) and divides the result by the number of judges. Finally, the S-CVI/Ave equation calculates an average of the content validation indexes for all indexes of the scale, known as the global CVI.

An agreement index among judges greater than 0.80 is desirable⁽¹⁵⁾ and a CVI equal to 1 (in a range between -1 and +1) indicates full agreement between judges and serves as a decision criterion for relevance and / or acceptance of the item assessed. However, full agreement is not to say that all judges responded similarly, it means that there was a relative harmony in the experts' scores.

We used the statistics program SPSS (version 17.0) to tabulate and calculate the mean CVI. This program presents the results through descriptive statistics in the form of figures/charts with percentages.

This study was submitted to the Ethics Committee of the Federal University of Ceará, in order to examine all its ethical aspects. This was done according to the criteria of Resolution 196/96 of the National Health Council⁽¹⁶⁾, and was approved by Referee Report No. 63/09.

RESULTS

Of a total of 17 judges who agreed to participate, 12 returned the completed paperwork; nine rural Family Health Strategy nurses and three university professors who participated in all stages of the research. All the judges were female and their average age was 37; on average they had completed eight years of tertiary or specialist training, and had, on average, four years of experience working as part of the Family Health Strategy or six years of teaching experience.

On receiving the completed questionnaires, we compiled a profile of the judges and went on to quantitatively analyze their responses in the three previously established areas. We gave the judges the option of adding corrections or notes on the discussion cards at a later date.

Regarding the validation of the discussion cards' appearance and clarity of the illustrations (F), the percentage varied between 83.3% and 100%. Evaluating the scripts (R), the majority of judges, 11 of the 12, deemed them to be readily understandable, with an index of 100% (Figure 1). It is worth noting that the F1 (cover) and F7 (final page) contain no text.

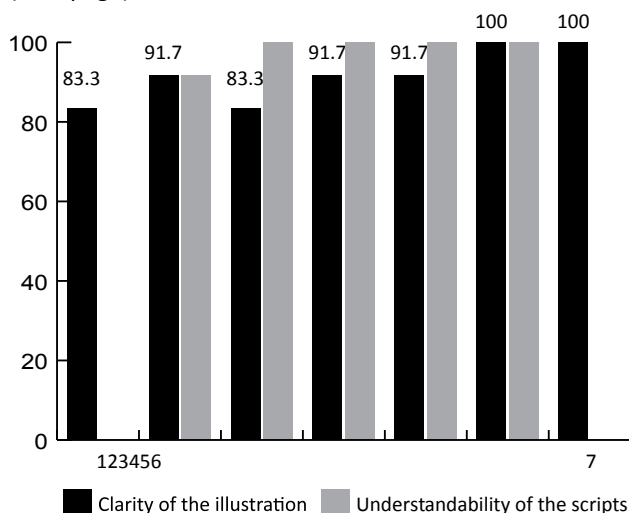
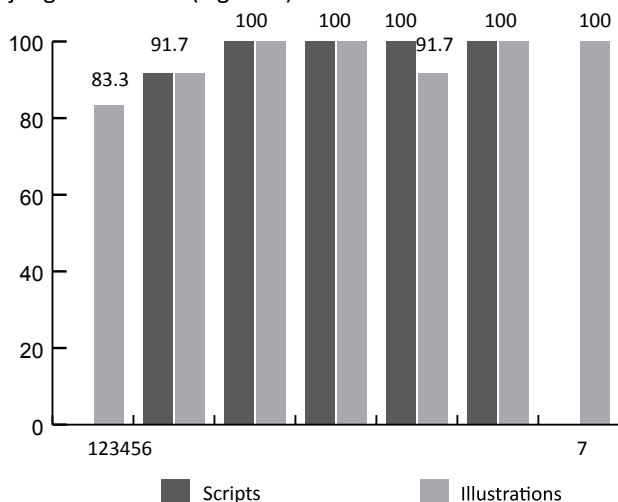


Figure 1 - Clarity of the discussion cards' illustrations and understandability of its scripts – Maranguape, CE, Brazil 2009

In terms of content validity, both of the illustrations and the scripts were evaluated on their relevance (yes or no) and on how relevant they were. Items judged to be irrelevant or having little relevance were given the value of zero, while those considered relevant or very relevant were given a value of one. Figure 2 includes only the illustrations and scripts that were assigned a value of 1.

Within this context of being judged relevant or very relevant, most of the scripts (R3, R4, R5 and R6) achieved approval ratings of 100%, as did the scripts (F3, F4, F6 and F7). The scripts F2 and F5 obtained 91.7% while F1 was judged as 83.3% (Figure 2).



* The percentages are relative to Value 1 (Relevant and very relevant).

Figure 2 - Degree of relevance of the discussion cards' illustrations and scripts. Maranguape, CE, Brazil 2009

Given the high percentages achieved for relevance, the global CVIs were 0.95 and 0.98 for the illustrations and scripts respectively. As a CVI greater than 0.80 is desirable, demonstrating high levels of agreement among the judges, our discussion cards was thus validated by the study⁽¹⁵⁾.

As to the overall perception of the judges (Figure 3), the discussion cards was generally considered to be excellent (66,7%), with everyone (100%) highlighting their ease and interest in using the discussion cards and its relevance for professional practice.

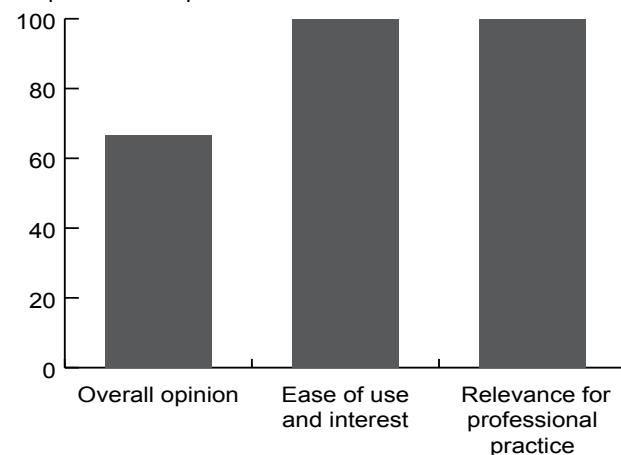


Figure 3 - Overall opinion of the judges on the ease of use, interest and relevance of the discussion cards for professional practice- Maranguape, CE, Brazil 2009

DISCUSSION

The album cover, referred to as F1, depicts a mother and her son at a table on which characteristic regional fruits and vegetables are arranged. Eleven judges (83.3%) considered the illustration to be clear, while the two judges who considered it to be unclear suggested no changes.

In terms of clarity and understandability, F2 and R2 achieved the same percentage (91.7%). The story begins with illustration F2, which shows two women who have been shopping with the same amount of money, \$5.00 (five dollars). The script R2, *Food and nutritional security* provides a general overview of the topic and is intended to guide professionals in how to approach the topic. The only judge who evaluated R2 as not being clear and comprehensive, made no mention of possible changes.

The theme of the first text (R2) was chosen due to the fact that food security is currently under discussion in many countries, such as Brazil, Venezuela, and the United States. In 2009, the *Food and Agriculture Organization of the United Nations* (FAO), launched a handbook, *The State of Food Insecurity in the World*, which describes food security as the state in which all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets dietary needs and food preferences for an active and healthy life⁽⁸⁾.

Therefore, ten years after the development of the National Policy on Food and Nutrition (PNAN), the expansion and enhancement of these strategies is a crucial step in the challenge of promoting food and nutritional security among the Brazilian population⁽¹⁷⁾.

The story continues with illustration F3, which shows the mother arriving home from the shopping trip in F2. Here we can see two common situations in the day-to-day life of many families: in the first we can see the mother who bought foods like fruits, vegetables, beans, among others, while in the second she purchased foods with low nutritional and energy content, such as soft drinks, cookies, etc. This illustration was rated as 83.3% in terms of understandability by the judges, while the accompanying script (R3) was considered 100% as it covers issues that the health professional can use to encourage a discussion among participants on the possibility of a healthy diet on a limited budget of \$5.00. With it, participants can come to the conclusion that nutritious food is not synonymous with expensive food.

It is necessary for this theme, introduced in F3 and R3, to be clear and comprehensive as consumption of processed foods has been grown rapidly. This may be related to advertisement in the media, which modifies and influences the ideas and opinions of consumers⁽¹⁸⁾. Perhaps this is why all of the judges considered both illustration and script to be 100% relevant, that is, they believe it is advisable to encourage the use of regional foods as healthier and more inexpensive options. This fact can be corroborated by a study conducted in the municipality of Marazion, where the current research paper was developed, which found that many children had diets characterized by food that not only had low energy and nutritional contents, but were also costly. This study showed the predominant use of processed foods (yogurt *DANONE*, *Miojo*[®], soft drinks), to the detriment of regional foods, which were used only for juicing⁽¹⁹⁾.

The illustrations and scripts for Hygiene habits (F4 and R4) as well as those for Regional foods: cashews and banana in our daily diet (F5 and R5) obtained a percentage of 91.7% for clarity and understandability, with only one judge considering this not to be the case. Addressing hygiene habits, both personal and regarding food handling, is essential, because many diseases can be transmitted by improper hygiene practices, undermining food security⁽²⁰⁾. It is also important that we raise this issue as how an individual handles food is a result of their background, being a practice learned from their parents, family and friends, at school or in their daily work⁽²¹⁾.

The illustration F5 and its respective text, R5, starts the discussion on the various daily uses of regional food, noting that one can make hamburger meat with cashews and farofa (toasted manioc flour) with banana.

Finally, Regional foods: pumpkin/squash and *Siriguella* in our daily diet (F6 and R6) and Food security through the

daily use of regional food (F7) had the maximum percentage of clarity and understandability (100%). The illustration F6, together with the text R6, explains that one can prepare mashed pumpkin and *Siriguella* leaf juice, which is rich source of vitamin C⁽²²⁾, emphasizing the fact that they can be found at any time of the year.

Given this diversity, the Ministry of Health published a manual, *Brazilian Regional Food*, in which it emphasizes the need to inform the population of the vast variety of fruits, vegetables, tubers and legumes in Brazil, where this may help communities to use local resources for accessible food options, and in turn contribute to food security and a community's nutritional status⁽⁷⁾.

These discussion cards, which show new food options, is in line with the views of several authors⁽²³⁾ who point out that (...) cooking should be creative space in which we can make interventions in food, where we should preserve the past but also innovate, for example adapting a recipe with new ingredients and procedures. It is a creative expression of the infinite ways we can combine and handle foods, and, being as it is a legitimate social practice within the organization of our societies, it may be considered as a creative space in our daily lives.

The last illustration, F7, represents a family scene using a variety of the regional foods mentioned in the discussion cards. The use of these foods is essential according to PNAN⁽¹⁾, which emphasizes the importance of

(...) rescuing regional food habits and practices related to the consumption of local foods that are low cost and have high nutritional values, as well as introducing more varied diets, from the early years, throughout adulthood and into old age.

In summary, all of the scripts and illustrations were judged above 80%, not only for clarity (illustrations) and comprehensibility (scripts), but also for relevance (relevant and very relevant). These results clearly indicate their importance to the discussion cards.

We also deemed it pertinent to evaluate the ease and applicability of this discussion cards in the context of childcare as well as its importance to professional practice. In these areas, the judges scored the discussion cards 100% in terms of acceptance and viability. Based on our aforementioned criteria, the global CVIs were 0.95 and 0.98 for the illustrations and scripts, respectively.

Nursing, then, clearly play a role in health education and in empowering rural families. Since 1986, based on the Ottawa Charter⁽²⁴⁾, it has been widely recognized that in order to promote good health, we need to empower local communities through health education. This training can and should be performed by health professionals who, being co-responsible in the process of improving the population's quality of life, are well placed to ensure good practice.

CONCLUSION

We met our objective of validating the discussion cards *Promoting food security with regional foods* as all the illustrations and their respective scripts were judged as relevant. The judges considered that all of the illustrations and scripts should remain in the discussion cards. The story is an important tool to help to spread the use of regional food, promoting food security in that it playfully portrays the day-to-day reality of the target audience - mothers of preschool children residing in rural areas.

Nurses can be more effective when armed with emancipatory technologies, such as these discussion cards, which exposes a reality in a playful way through the fictitious story of a family using regional foods. During childcare consultations, they can use these technologies to promote a change in eating habits and, consequently, achieve optimal levels of child growth and development through improving food security and nutrition.

The discussion cards presented in this study are the first to address the use of regional food with a focus on food security. Thus, having proven the validity of its content and appearance, it can now be used by nurses during childcare consultations as a new educational tool.

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