

# Analysis of the reaction and behavior of nurses after training on young child feeding

*Avaliação de reação e comportamento de enfermeiras após treinamento sobre alimentação infantil*

*Evaluación de la reacción y comportamiento de las enfermeras después de la formación sobre alimentación infantil*

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## ABSTRACT

**Objective:** to assess the reaction and behavior of nurses after training on the use of educational tool to promote healthy nutrition to children. **Method:** pilot assessment study, of descriptive and quantitative approach, carried out in 2014 with eight nurses from the rural area of Ceará, Brazil, by observing a training workshop on the use of the serial album "Alimentos regionais: promovendo a segurança alimentar na promoção da alimentação infantil saudável" [Regional food: promoting food safety through child healthy feeding]. **Results:** the analysis of the reaction of nurses to the workshop showed that all of them (100%) were satisfied with the training. In behavior analysis, more than a half of the nurses have achieved the expected performance when implementing the illustrations of the serial album, seven of them (87.5%) being considered able to use the serial album. **Conclusion:** the training was considered effective, as all the participant nurses were satisfied and most of them considered capable of using the educational tool in promoting child healthy feeding.

**Descriptors:** Educational assessment; Food and Nutritional Education; Learning; Health Promotion; Nursing.

## RESUMO

**Objetivo:** avaliar a reação e o comportamento das enfermeiras após treinamento para utilização de tecnologia educativa na promoção da alimentação infantil saudável. **Método:** estudo piloto avaliativo, descritivo e de abordagem quantitativa, realizado em 2014 com oito enfermeiras na zona rural do Ceará, Brasil, por meio de oficina de treinamento e capacitação para utilização do álbum seriado *Alimentos regionais promovendo a segurança alimentar* na promoção da alimentação infantil saudável. **Resultados:** a avaliação de reação das enfermeiras à oficina sinaliza que todas (100%) ficaram satisfeitas com o treinamento. Na avaliação de comportamento, mais da metade das enfermeiras obtiveram desempenho dentro do esperado na aplicação das ilustrações do álbum seriado, sendo sete delas (87,5%) consideradas aptas para utilizar o álbum seriado. **Conclusão:** o treinamento foi considerado eficaz, evidenciado por reação satisfatória das enfermeiras e capacitação da maioria delas para usar a tecnologia educativa na promoção da alimentação infantil saudável.

**Descritores:** Avaliação Educacional; Educação Alimentar e Nutricional; Aprendizagem; Promoção da Saúde; Enfermagem.

## RESUMEN

**Objetivo:** evaluar la reacción y el comportamiento de las enfermeras tras entrenamiento para la utilización de tecnología educativa en la promoción de la alimentación infantil sana. **Método:** estudio piloto evaluativo, descriptivo y de abordaje cuantitativo, realizado en 2014 con ocho enfermeras en la zona rural de Ceará, Brasil, por medio de taller de entrenamiento y capacitación para utilización del rotafolio *«Alimentos regionais promovendo a segurança alimentar»* en la promoción de la alimentación infantil saludable. **Resultados:** la evaluación de reacción de las enfermeras al taller señala que todas (100%) quedaron satisfechas con el entrenamiento. En la evaluación de comportamiento, más de la mitad de las enfermeras obtuvieron desempeño dentro de lo esperado en la aplicación de las ilustraciones del rotafolio, siendo siete de ellas (87,5%) consideradas aptas para utilizarlo. **Conclusión:** el entrenamiento fue considerado eficaz, evidenciado por reacción satisfactoria de las enfermeras y de la capacitación de la mayoría de ellas para usar la tecnología educativa en la promoción de la alimentación infantil sana.

**Descritores:** Evaluación Educacional; Educación Alimentaria y Nutricional; Aprendizaje; Promoción de la Salud; Enfermería.

## INTRODUCTION

The trainings include short and medium duration actions, such as courses and workshops, to develop the skills and enhance knowledge and decision-making ability of the professionals responsible for the currently conducted activities<sup>(1)</sup>.

To verify the effectiveness of the training and development programs, four types of assessment are indicated: reaction, learning, behavior and results<sup>(2)</sup>.

The reaction assessment is the first step to measure the effectiveness of training and development programs aiming at observing its participants' reactions on content, the used methods, how useful and interesting the approached theme is, the role of the instructor, and training conditions<sup>(2)</sup>.

While the behavior assessment considers the trained professional in an actual work situation. This step is very important because sometimes despite trained professionals having assessed the training positively (reaction), and having proved everything they have learned during learning assessments, they end up not changing their behavior in their daily work practices<sup>(2)</sup>.

The learning assessment sets out to obtain information on knowledge, skills and/or behaviors of the participants throughout training.

Finally, results assessment presents the results achieved by the program, such as reduced costs, improved quality, increased productivity, among others<sup>(2)</sup>.

Considering the importance of training assessment, a systematic review on training of young child feeding health professionals of children from six months to two years of age reviewed 10 randomized studies, having observed that, after training, the children's feeding pattern improved regarding their daily intake of energy, food frequency and diet diversity<sup>(3)</sup>.

Studies carried out with nursing professionals also pointed out that after having completed training, they showed significant improvement in knowledge acquisition<sup>(4-6)</sup>, skills<sup>(7-8)</sup>, and in the development of care activities<sup>(9-10)</sup>.

In Brazil, a study with 80 nurses revealed that most of those who work in primary health care don't have enough professional formation to meet the nutritional needs of the population, which is due to the lack of knowledge (21.25%) and study opportunities (18.75%)<sup>(11)</sup>.

With this in mind, this study conducted and assessed a training on how to use the serial album "Regional food: promoting food safety through child healthy feeding" found in the "*Dez passos para uma alimentação saudável: guia alimentar pra crianças menores de dois anos*" ["Ten steps to healthy feeding: food guide for children under two"], of the Brazilian Ministry of Health, which states that the introduction of complementary foods must respect the cultural and feeding identity of each Brazilian region, thus valuing its regional foods<sup>(12)</sup>. We opted to use this serial album as an educational tool as its content was approved for nursing use in child health care by a previous study<sup>(13)</sup>.

## OBJECTIVE

To assess the reaction and the behavior of nurses after training on the use of an educational tool to promote healthy eating among kids.

## METHOD

### Ethical concerns

The research project approved by the Ethics Committee of the Universidade Federal do Ceará [Federal University of Ceará], and all the nurses and judges who accepted to take part in it have signed a Signed and Informed Consent form (TCLE).

### Design, location and period

Pilot assessment study, of descriptive and quantitative approach, carried out in the Unidades de Atenção Primária à Saúde (UAPS) [Primary Health Care Units] of the rural area of Ceará, Brazil, from September to November 2014.

### Population or sample: inclusion and exclusion criteria

The study population comprised 20 nurses who worked in the fourteen UAPS units of the region, comprising 16 districts with approximately 27,252 inhabitants<sup>(14)</sup>.

From the 20 nurses working in the locations under study, 9 have met the following inclusion criteria: having at least two years of academic training and attending a training workshop in the previously scheduled day. Three nurses were excluded from this study for having participated in a course on the same theme. This way, the initial sample consisted of 9 nurses and the final one, of 8, considering a nurse decided to back out of the UAPS where she worked after having participated in the first phase of the research.

### Research protocol

Data collection occurred in four steps: The first was characterized by the training workshop with the nurses, seeking to teach them how to use the serial album "Regional food: promoting food safety through child healthy feeding".

The training workshop followed the methodology of oral exposure through dialogue, comprising six sessions and four hours altogether: course schedule explanation; dynamic presentation of participants; tasting of the regional recipes contained in the album; demonstration of the application of the album by the researcher; application of the simulation activity album by nurses; and assessment of reaction to the training workshop.

The educational tool used in the workshop, the serial album "Regional food: promoting food safety through child healthy feeding" comprises seven illustrations (cover and six other illustrations) exposed to the target-audience in the leaf back; and six flipcharts for professional use in the forehead. The themes approached in it are, respectively: food and nutritional safety (illustration 1); regional food items (illustration 2); food hygiene (illustration 3); regional recipes with cashews and banana (Illustration 4), recipes with pumpkin and ceriguela (*Spondias purpurea*) (Illustration 5); and daily food safety using regional food items (Illustration 6). It is worth to outline that the serial album was approved with Content Validity Index of illustrations of 0.95 and flipcharts of 0.98<sup>(13)</sup>.

After the workshop, we assessed the nurses' reaction to the training session. We handed them in a previously approved self-explanatory questionnaire that contained the following information: acquisition of a new knowledge by the participant, methodology used in the workshop, course load of the workshop, chance of using the serial album in primary health care consults, willingness to apply the themes and the educational tool in their professional practice, serial album content, and general assessment of the workshop (great, good, regular, poor).

The second step comprised the educational activity conducted by the nurses in the UAPS where they worked using the serial album with the aimed target-population: family members (parents/legal guardians) of children in the early childhood. A total of eight nurses has taken part in this step because one of them resigned from the institution where she worked. Thus, each nurse has invited a group of six to ten families to participate in a scheduled activity. We decided to record these activities for its later assessment. The recordings had an average duration of 25 minutes per nurse, totaling 200 minutes. We only started recording after the signing of the term of consent and image authorization by professionals and family members.

The third step was the assessment of nursing behavior by judges from the footage of educational activities. For this, were selected and trained five judges, who were also nurses, on the use of flipcharts based on the following criteria: postgraduate title in nursing (*stricto sensu* and/or *lato sensu*), with experience in health education activities and child health related themes. The judge sample was collected by the snowball method, in which each judge must indicate the following judge. This way, the five selected judges were female, with average age of 32 years old, ranging between 24 and 45 years old. Three (60%) of them had master's degrees and were doctoral candidates, and two of them (40%) were studying for a master's degree. When it comes to professional experiences in child health care: three had experience in UAPS (60%), one in hospital care (20%), and all of them had teaching experience (100%).

According to another study<sup>(16)</sup>, the footage was shown to all the judges at the same time by an external collaborator, who also made sure to pause between each recording so that they could have some time to make notes. This step took five hours. We highlight that the judges received orientations regarding the need to avoid exchanging opinions with the other colleagues after the beginning of the presentations, as they had to fill the observation script individually.

The observation script, elaborated and validated in a previous study<sup>(17)</sup> comprises nine assessment items distributed based on the illustrations of the serial album. The judges had to tick the options "yes" or "no" depending on the nurses' performance of each item. The items are: introduces himself/herself to all participants and asks them to do the same; explains that the album consists of a story that is going to be told by them; asks them to observe the illustration before discussing it; presents the questions proposed by the demonstration script, encouraging its discussion; encourages the participation of individuals; performs appropriate explanations using clear and understandable language; makes connections with the preceding illustrations; stimulates participants to give examples from their daily life and

personal experiences; and synthesises the discussed content, highlighting its key messages.

After signaling all achievements, the judges had to classify the nurses' behavior according to its performance by illustration and ability to use of the serial album.

Regarding the performance by illustration, the following classification was adopted<sup>(18)</sup>: the nurse who fulfilled between 75% and 100% of the items by illustration would be considered within expectations; the nurses between 50 and 74.99% would be considered below expectations; and those with less than 50% were considered a lot below expectations.

As for aptitude, the nurse would be considered apt if their performances showed to be within expectations in more than a half of the illustrations ( $\geq 4$  illustrations), and a lot below expectations in one illustration. Those with development within expectations in at least half of the illustrations of the album ( $< 4$  illustrations) and/or that had a performance a lot below expectations in more than one illustration would not be considered apt.

Finally, the fourth step of the study was giving feedback to behavior assessments. The researcher presented the consolidated results to the group of nurses and outlined the items that were or were not completed by most of them. Besides also making suggestions to improve participants' development based on what was suggested by the judges.

### Statistical and results analyses

The information collected by assessing the reaction and behavior of nurses were analyzed by employing absolute and relative frequencies, averages and standard deviations of the quantitative variables, these being analyzed according to the relevant literature.

To ensure the accuracy of results of the classification of nurses according to their aptitude, we used the Cohen's Kappa coefficient<sup>(19)</sup> to analyze the reliability of the behavior assessments. Thus, we observed a general kappa of 0.84, which implies an excellent concordance between the observed assessments, not being necessary, therefore, to adapt the used instrument.

## RESULTS

Concerning the characterization of the nine nurses, one can see that all were female, with an average age of 32 years, ranging from 23 to 59 years ( $SD = \pm 10.45$ ). Most of them had a *lacto sensu* postgraduation degree (7/77.8%) in the primary health care field (5/55.6%) Seven nurses (77.8%) reported having some knowledge on regional foods, but none of them knew the manuals "Brazilian regional foods" of the Brazilian Ministry of Health, and five of them (55.6%) had insufficient information on food and nutritional safety.

In the reaction assessment, all the nurses reported that the workshop provided them with new knowledge on "regional food items", "food and nutritional safety" and "integral utilization of food items", and agreed that the methodological approach of the workshop, oral exposure through dialogue contributed to their learning process.

When it comes to the course load, nurses reported having considered four hours as enough.

About the use of the serial album in the primary health care, all the nurses have considered it as viable, intending to approach its content in their professional practice. As for the inclusion of contents in the course or the serial album, there were no suggestions.

Regarding training assessment, it was found that all the participants have referred to it as great (9/100%), which suggests they have had a good learning experience.

Based on the nurses' impressions on the training, it is possible to state that they reported being satisfied, which proves that the course has met its immediate objectives and the participants' expectations, besides presenting appropriate format, showing no need for further improvements.

As for the behavior assessment of the eight nurses that carried out the educational activities in UAPS using the serial album, we verified their performance by illustrations and aptitude to use of the material.

Figure 1 presents the performance of the nurses in each illustration of the serial album, according to most of the judges. This way, one can see that after training, more than a half of the group of nurses obtained a performance within the expectations when using the serial album. We highlight the performance of the nurses in Illustration 3, which shows that almost all of them (N=7) obtained performance within expectations.

When it comes to the items used for performance classification by illustrations, it is appropriate to point out that the items "Presents the questions proposed by the demonstration script" and "Encourages the participation of individuals", present in all illustrations, were fulfilled by the most of the nurses.

On the other hand, the item "introduces himself/herself to all participants and asks them to do the same" in the cover was

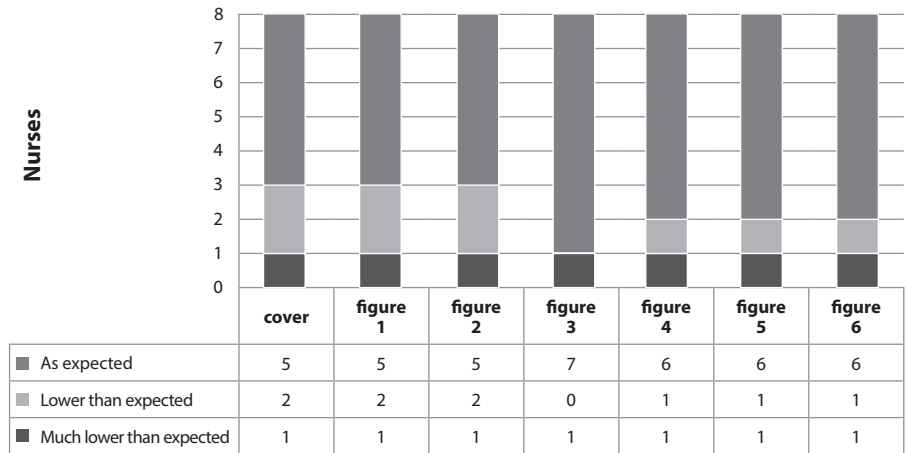


Figure 1 – Distribution of nurses according to their performance by illustration of the serial album

not fulfilled by any nurse. It is worth mentioning that in the last step of the study, in which the researcher approach all the assessments, the nurses reported already knowing the mothers who participated in the study.

In addition, five nurses did not accomplish the item "performs appropriate explanations using clear and understandable language" contained in illustration 2 of the album, as they haven't highlighted the characteristics of regional food items, which are known for being of good quality, easy access and low cost. However, according to what was reported by the judges, such characteristics were mentioned by the nurses when they were talking about Illustration 1, which should have only address food safety.

In Table 1, one can see that from eight nurses, seven (87.5%) were considered apt by most the judges. Only Nurse 5 was classified as non apt to use the serial album, considering she was within the expectations in less than four illustrations and/or a lot below expectations in more than one illustration of the album. Nevertheless, training can be seen as effective, as more than 75% of its participants were considered apt after its completion.

Table 1 – Classification of performance and aptitude of each nurse on the use of the serial album

Informants	Performance classification by album illustrations															Aptitude classification	
	Judge 1			Judge 2			Judge 3			Judge 4			Judge 5			Apt	Not apt
	W	B	A	W	B	A	W	B	A	W	B	A	W	B	A		
Nurse 1	6	0	1	5	1	1	6	0	1	6	0	1	4	3	0	5	0
Nurse 2	7	0	0	6	1	0	6	1	0	7	0	0	7	0	0	5	0
Nurse 3	6	1	0	6	1	0	5	2	0	6	1	0	6	1	0	5	0
Nurse 4	6	1	0	6	1	0	6	1	0	6	1	0	5	2	0	5	0
Nurse 5	0	1	6	0	4	3	1	0	6	0	2	5	0	1	6	0	5
Nurse 6	4	3	0	4	1	2	3	3	1	4	2	1	5	1	1	3	2
Nurse 7	7	0	0	4	3	0	4	3	0	6	1	0	5	2	0	5	0
Nurse 8	7	0	0	6	1	0	7	0	0	7	0	0	6	1	0	5	0

Note: W (within expectations); B (below expectations); A (a lot below expectations).

## DISCUSSION

From the assessment of reaction, all the nurses reported that the training workshop was a good opportunity to acquire knowledge. This finding corroborates with several studies in which there is also a significant increase in participants' knowledge after training<sup>(4-6)</sup>.

As for the didactic presentation of content by oral exposure through dialogue, all the nurses agreed that the methodological proposal of the workshop contributed to learning. In oral exposure through dialogue, the exchange of knowledge, the questionings and the subject's participation can facilitate the content understanding. A study developed in a University hospital in the Central-West of Brazil has assessed the opinion of nurses on continuing education, verifying that exposure through dialogue is the mostly used teaching strategy in training programs<sup>(20)</sup>.

When it comes to the course load of the training (four hours), 100% of participants reported finding it enough. A study carried out in São Paulo found that the course load of two hours and a half was considered insufficient for almost all of its participants; however, only a few of them have suggested a higher amount of hours<sup>(5)</sup>.

When using the serial album in primary health care, similar findings could be noticed in a training on the prevention of pressure ulcers, whose participants were encouraged to apply the recently acquired knowledge in their practice<sup>(21)</sup>.

Finally, the reaction assessment outlined nurses' satisfaction with the provided training, which corroborates with another study that also obtained good results regarding the satisfaction of participants who underwent training<sup>(5)</sup>.

Currently, reaction assessment are used in about 50% of the studies aimed at assessing the educational activities for health professionals<sup>(22)</sup>, revealing that it is already common to see studies that consider the participants' opinions to measure training effectiveness. However, we most encourage its use, considering it contributes to the development, adequacy and/or enhancement of new courses.

Regarding the nurses' behavior assessment associated with their performance, more than half of them were within the expectations when implementation the illustrations from the serial album.

Also corroborating with our findings, after completing a training in Pittsburgh, nurses showed significant improvements when practicing the adequate criteria to deal with alcoholics and reported having detected alcoholism a lot easier when conducting interventions and guiding patients to treatment<sup>(9)</sup>.

A study developed in New York also showed that, after training, performance scores of nurses that had to make use of sterile techniques during central vein catheterization improved significantly, leading to an 85% reduction in the rate of average catheter-related infection in the unit<sup>(10)</sup>.

It is worth to point out that the positive results in assessments of professional behavior after training are converted into positive impacts on the population. A literature review<sup>(23)</sup> of studies on professionals and caregivers training on feeding children under two years of age had the following main results: improvements in performance of health professionals regarding the practice of nutritional counseling; increases in exclusive breastfeeding;

improvement in the nutritional status of children under two years of age, when compared to period previous to the counseling; and maternal satisfaction concerning the received guidance.

Still in Figure 1, we highlight that the best performances were seen in Illustration 3, which addresses food hygiene. We believe this can be explained by the ease of communicating this content, which is much more familiar than the others, as mothers often hear about the importance of food hygiene when attending childcare consultations from nurses<sup>(24)</sup>.

Also referring to the performance classification, it is possible to note that almost all items of the behavior assessment tool were carried out by nurses during the use of the serial album with the mothers of children in early childhood.

We outline "Presents the questions proposed by the demonstration script, encouraging its discussion" and "Encourages the participation of individuals" items, which directly refer to the liberating pedagogy of Paulo Freire.

Dialogic and problematizing education confirms its relevance and effectiveness in another study, which identified that the food and nutritional education of older people based on problematizing education allowed the approach of relevant and interesting themes to participants, as most of them were suggested by themselves, highlighting their transformations in dietary behavior<sup>(25)</sup>.

As for the items not met by most nurses, we highlight "performs appropriate explanations using clear and understandable language", in illustration 1, in which they should have presented the characteristics of regional food items. According to the judges, some nurses had already addressed this item when talking about Illustration 1.

The teaching technique used by the nurses during presentations "group discussion". This technique requires less organization when presenting the content of lectures and seminars. However, the teacher must act as a facilitator to guide the discussion towards its objectives<sup>(26)</sup>.

This way, despite regional food being illustrated throughout the whole serial album, one must consider that it presents a story with a logical sequence that must be clarified by the instructor, but only passed on by the students. Therefore, the approach of these themes could hinder the understanding of the concepts by students, compromising the result of the educational activity.

Regarding the ability of nurses to use the serial album (Table 1), it was noted that, from eight participants, seven (87.5%) were considered apt by most judges; only Nurse 5 being classified as non apt.

Being "apt" means that the nurse can use the serial album "Alimentos regionais: promovendo a segurança alimentar" based on the proposed dialogic communication methodology, besides also implying they have enough knowledge to develop the educational activities with the mothers of children in early childhood.

Studies conducted in other countries confirm our findings, showing that the training programs enhance communication skills and foster nurses' empathy towards the patients and their family members<sup>(7-8)</sup>.

When it comes to knowledge improvement after nursing trainings, several studies have indicated an increase in knowledge on clinical practice in psychiatric hospitals<sup>(27)</sup>, hypertension<sup>(4)</sup>, and on the prevention and treatment of ulcers by<sup>(6)</sup>, these being observed

in less than 100% of the participants. This corroborates with our findings, because 87.5% of nurses were considered apt.

Therefore, it is understood that training is essential to ensure the quality of health care services, as it can improve professionals' performance and knowledge. Thus, there is need for further training sessions to approach all of those who work with food education of children.

### Study limitations

Despite its relevance, the study had the reduced sample size, the restriction to a single region, and the conduction of only two assessment levels (reaction and behavior) as limitations. Therefore, we suggest the development of further learning assessments and results to properly evaluate training consistency as a whole, by considering the four assessment types.

### Contributions to the nursing, health or public policies field

From the training workshop, nurses will be able to develop educational activities focused on promoting healthy young child feeding by using a valid educational tool.

In addition, it is expected that the presented training proposal, consisting of demonstration and simulation activities, recipes tasting and educational activities, serves as a model for the development of other training workshops, allowing the conduction of other reviews of its proposal, acceptance, practicability and effectiveness.

### CONCLUSION

The assessment of the nurses' reaction revealed they were satisfied after finishing training, and the assessment of nurses' behavior demonstrated that training contributed to the development of skills and behaviors on the use of the serial album "*Alimentos regionais promovendo a segurança alimentar*"; having dialogical communication as reference. Most participants achieved a performance within the expected in the illustrations, 75% of them being considered apt.

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