

# Nurses' knowledge about regional foods, food & nutritional safety

*Conhecimento dos enfermeiros sobre alimentos regionais, segurança alimentar e nutricional*

*Conocimiento de las enfermeras sobre seguridad regional de alimentos, alimentos y nutrición*

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## ABSTRACT

**Objectives:** to analyze the knowledge of nurses working in Primary Health Care Units about regional foods, food & nutritional safety. **Methods:** a cross-sectional study conducted with 71 nurses working in health care units in the city of Fortaleza, Ceará. Data were obtained through administration of two questionnaires, subsequently analyzed through statistical tests. **Results:** a satisfactory level of knowledge was found for most nurses, and it was evident that those with graduate degrees had greater knowledge about 'regional food basics' ( $p=0,014$ ) and 'frequency of use of regional foods' ( $p=0,014$ ); the age of the professionals had an inversely proportional relationship with the knowledge about the 'concept of food & nutritional safety' ( $p=0,009$ ). **Conclusions:** nurses had satisfactory knowledge about the themes addressed, and professionals should be encouraged to improve their knowledge and instruct families on the importance of a diet based on regional foods.

**Descriptors:** Food; Knowledge; Food and Nutrition Education; Health Promotion; Nursing.

## RESUMO

**Objetivos:** analisar o conhecimento de enfermeiros atuantes em Unidades de Atenção Primária à Saúde acerca das temáticas Alimentos Regionais, Segurança Alimentar e Nutricional. **Métodos:** estudo transversal, realizado com 71 enfermeiros atuantes em unidades de saúde do município de Fortaleza, Ceará. Os dados foram obtidos a partir da aplicação de dois questionários e posteriormente analisados a partir de testes estatísticos. **Resultados:** observou-se satisfatório nível de conhecimento na maioria dos enfermeiros, ficando evidenciado que aqueles que fizeram pós-graduação apresentaram melhor conhecimento acerca dos 'conceitos básicos de alimentos regionais' ( $p=0,014$ ) e 'frequência da utilização dos alimentos regionais' ( $p=0,014$ ); e que a idade dos profissionais apresentou relação inversamente proporcional com o conhecimento sobre o 'conceito de segurança alimentar e nutricional' ( $p=0,009$ ). **Conclusões:** os enfermeiros apresentaram conhecimento satisfatório acerca das temáticas abordadas, devendo-se estimular os profissionais a aprimorarem seus conhecimentos e a orientarem famílias acerca da importância de uma alimentação baseada nos alimentos regionais.

**Descritores:** Alimentos; Conhecimento; Educação Alimentar e Nutricional; Promoção da Saúde; Enfermagem.

## RESUMEN

**Objetivos:** analizar el conocimiento de las enfermeras que trabajan en las unidades de atención primaria de salud sobre el tema Alimentos regionales, seguridad alimentaria y nutrición. **Métodos:** estudio transversal realizado con 71 enfermeras que trabajan en unidades de salud en la ciudad de Fortaleza, Ceará. Los datos se obtuvieron de la aplicación de dos cuestionarios y posteriormente se analizaron a partir de pruebas estadísticas. **Resultados:** se observó un nivel de conocimiento satisfactorio en la mayoría de las enfermeras, lo que demuestra que aquellos con estudios de posgrado tenían un mejor conocimiento sobre los "conceptos básicos de los alimentos regionales" ( $p=0,014$ ) y la "frecuencia de uso de los alimentos regionales" ( $p=0,014$ ); y que la edad de los profesionales presentaba una relación inversamente proporcional con el conocimiento sobre el 'concepto de seguridad alimentaria y nutricional' ( $p=0,009$ ). **Conclusiones:** las enfermeras presentaron un conocimiento satisfactorio sobre los temas abordados, y se debe alentar a los profesionales a mejorar su conocimiento y guiar a las familias sobre la importancia de una dieta basada en alimentos regionales.

**Descriptorios:** Alimentos; Conocimiento; Educación Alimentaria y Nutricional; Promoción de la Salud; Enfermería.

## INTRODUCTION

Adequate, healthy eating is a basic human right that involves guaranteeing continuous and regular access to a dietary practice that is appropriate to the biological and social aspects of the individual. It must be consistent with nutritional requirements, referenced by the food culture, physically and financially accessible, based on sustainable production practices, and adequate in quantity and quality, according to principles of diversity, balance, and moderation<sup>(1)</sup>.

Care that is provided with regard to eating should start during childhood, because during this period there are important changes in the formation of eating habits, behaviors related to eating are acquired, and eating errors are initiated<sup>(1)</sup>. In addition, improvement of dietary patterns may decrease genetic associations with weight gain, reducing cases of obesity, which is a reality that is widely seen in families today<sup>(2)</sup>. Thus, the situation of dietary and nutritional safety (DNS) is an important aspect to be considered in the family context, as it may influence the choice of food types<sup>(3)</sup>.

Dietary and nutritional safety is defined as healthy, affordable, quality, sufficient, and continuous eating conditions without compromising access to other essential needs, based on health-promoting dietary practices that respect cultural diversity and which are environmentally, culturally, economically, and socially sustainable<sup>(4)</sup>.

In this context, health professionals should provide instructions to guarantee DNS: a diet based on the integration of regional foods (RF), which refer to foods that are available in each region of Brazil, easily accessible, low cost, and that have a high nutritional value<sup>(5)</sup>, because regional and personal preferences form the eating habits of the population<sup>(1)</sup>.

However, for the proper use of these foods, it is essential that professionals have the necessary knowledge on the subject, so that they can deliver care based on the consumption of these foods. Thus, the Ministry of Health emphasizes the need to encourage the consumption of regional foods and promote food safety, as they relate to the promotion of collective health when considering sociocultural issues of individuals<sup>(5)</sup>.

## OBJECTIVES

To analyze the knowledge of nurses working in Primary Health Care Units (PHCU) about regional foods, food safety, and nutrition.

## METHODS

### Ethical aspects

The project was approved by the Research Ethics Committee of the Federal University of Ceará, in compliance with Resolution No. 466/12 of the National Health Council, respecting the aspects of autonomy, justice, non-maleficence, and beneficence<sup>(6)</sup>.

### Study design, settings and period

This was a quantitative, descriptive, cross-sectional study, conducted from February to May of 2014, in all 28 PHCU located in two Regional Executive Offices in Fortaleza-Ceará, randomly chosen.

## Population and inclusion and exclusion criteria

The population of nurses working in both Regional Executive Offices consisted of 104 professionals. To select the sample, the following inclusion criteria were used: having at least one-year experience in the Family Health Strategy (FHS), and conducting child care appointments. The following exclusion criteria were adopted: nurses who were on leave and/or vacation during data collection, as well as those who had already participated in the training of the Brazilian Breastfeeding and Feeding Strategy [*Estratégia Amamenta e Alimenta Brasil*]. The final sample consisted of 71 nurses.

## Study Protocol

For data collection, an initial sociodemographic questionnaire was used, containing data such as age, gender, time working in the FHS, and undergraduate degree. Then, a knowledge assessment questionnaire on 'regional foods' and 'food safety' was administered, which had been developed and validated in a previous study, conducted in the metropolitan region of Fortaleza - Ceará<sup>(7)</sup>, with the purpose of measuring theoretical knowledge about the themes mentioned. The questionnaire was submitted to the calculation of the Content Validity Index (CVI) for each question individually, obtaining values between 0.8 and 1.0<sup>(7)</sup>.

This questionnaire consists of thirteen closed-ended questions, each with four response options, of which the participants should indicate only one alternative that they considered correct. The thirteen questions involve the themes of RF and DNS, as well as recipes to be prepared using these foods, which were categorized into six axes, as shown in Chart 1.

**Chart 1** - Questions and corresponding axes, Fortaleza, Ceará, Brazil, 2014

Questions	Text	Axes
Question 1	What are regional foods?	Axis 1. Regional Food Basics
Question 2	What are the characteristics of regional foods?	Axis 1. Regional Food Basics
Question 3	Regional foods belong to which food group?	Axis 2: Regional Food Groups
Question 4	Check the item that contains only regional foods (classified by the Ministry of Health)	Axis 3. Examples of Regional Foods
Question 5	What is the recommended frequency of using regional foods in your child's diet?	Axis 4. Frequency of use of regional foods in children's diets
Question 6	What is food safety?	Axis 5. Concept of Food Safety
Question 7	Which substance, provided at Healthcare Stations, can be used to immerse foods before preparation?	Axis 6. Knowledge about possible foods and recipes used with RF
Question 8	Check the item that does NOT correspond to a type of food to be prepared with cashews.	Axis 6. Knowledge about possible foods and recipes used with RF
Question 9	What major vitamin is found in cashews?	Axis 6. Knowledge about possible foods and recipes used with RF

To be continued

Chart 1 (concluded)

Questions	Text	Axes
Question 10	Check the item that corresponds to a type of preparation using bananas.	Axis 6. Knowledge about possible foods and recipes used with RF
Question 11	Check the item with the type of preparation (or recipe) using pumpkin.	Axis 6. Knowledge about possible foods and recipes used with RF
Question 12	Check the item showing a type of preparation (or recipe) using siriguela (jocote).	Axis 6. Knowledge about possible foods and recipes used with RF
Question 13	Regional food consumption can contribute to:	Axis 1. Regional Food Basics

Note: RF - Regional Food.

The questions in the questionnaire were developed considering the content of the script of the serial album, "Regional Foods Promoting Food Safety" [*Alimentos regionais promovendo a Segurança alimentar*],<sup>(3,8)</sup> and the Ministry of Health manual, *Brazilian Regional Foods [Alimentos Regionais Brasileiros]*<sup>(5)</sup>.

### Analysis of results and statistics

To consider that nurses had satisfactory knowledge on the theme, a minimum percentage of correct answers was established at 70%, corroborating a previous study<sup>(9)</sup> regarding the teaching-learning process of patients on the waiting list for liver transplantation, which used a similar course as the present study.

The Statistical Package for Social Sciences Program (SPSS Inc., Chicago, United States) version 20.0 was used for analysis, and the data are presented in tables. To investigate the relationship between the variables, the chi-square ( $\chi^2$ ) and chi-square ( $\chi^2$ ) tests with continuity correlation were used, assuming a significance level of 5%. The thirteen questions were categorized into six axes for better comparison, entitled: 1. RF basics, 2. RF groups, 3. Examples of RF, 4. Frequency with which RF can be offered, and, 5. Concept of FS. In addition to these, axis 6 (Knowledge about possible foods and recipes used with RF) was individually designed and explored.

**Table 1** - Association between nurses' theoretical knowledge in each axis and the variables studied, Fortaleza, Ceará, Brazil, 2014

Variables	RF Basics			RF Group			Examples of RF			Frequency of use of RF			Concept of FS		
	Right N (%)	Wrong N (%)	p value	Right N (%)	Wrong N (%)	p value	Right N (%)	Wrong N (%)	p value	Right N (%)	Wrong N (%)	p value	Right N (%)	Wrong N (%)	p value
Age			0.62 <sup>2a</sup>			1.47 <sup>1b</sup>			3.04 <sup>4a</sup>			2.77 <sup>6b</sup>			0.00 <sup>5b</sup>
29-39	43 (60.5)	1 (1.4)		39 (54.9)	5 (7.0)		40 (56.4)	4 (5.6)		44 (61.9)	--		35 (49.3)	9 (12.7)	
40-49	19 (26.8)	--		18 (25.4)	1 (1.4)		15 (21.1)	4 (5.6)		18 (25.4)	1 (1.4)		8 (11.3)	11 (15.5)	
>50	8 (11.3)	--		8 (11.3)	--		8 (11.3)	--		8 (11.3)	--		4 (5.6)	4 (5.6)	
Time working in the FHS			1.75 <sup>5a</sup>			1.93 <sup>2a</sup>			1.45 <sup>2a</sup>			1.75 <sup>5a</sup>			0.53 <sup>2a</sup>
1-9	25 (35.2)	1 (1.4)		23 (32.4)	3 (4.2)		23 (32.4)	3 (4.2)		25 (35.2)	1 (1.4)		19 (26.8)	7 (9.85)	
10-14	29 (40.8)	--		26 (36.6)	3 (4.2)		27 (38.0)	2 (2.8)		29 (40.8)	--		19 (26.8)	10 (14.0)	
>15	16 (22.6)	--		16 (22.6)	--		13 (18.4)	3 (4.2)		16 (22.6)	--		9 (12.7)	7 (9.85)	
Graduation			0.01 <sup>4a</sup>			0.09 <sup>4a</sup>			0.12 <sup>9a</sup>			0.01 <sup>4a</sup>			0.73 <sup>9a</sup>
Yes	69 (97.2)	1 (1.4)		64 (90.1)	6 (8.5)		62 (87.3)	8 (11.3)		69 (97.2)	1 (1.4)		47 (66.2)	23 (32.4)	
No	1 (1.4)	--		1 (1.4)	--		1 (1.4)	--		01 (1.4)	--		--	1 (1.4)	

Note: a -  $\chi^2$  with continuity correlation, b -  $\chi^2$ ; RF - Regional Food; FS - Food Safety.

## RESULTS

Of the 71 nurses interviewed, there was a predominance of females (91.5%), with a mean age of 38.8 years (standard deviation = 6.59). Regarding the academic education of professionals, all had *lato sensu* specialization. Regarding their time working in the FHS, 29 (40.8%) had worked between 10 - 14 years.

Almost all nurses (n=69; 97.2%) reached or exceeded the mean number of correct answers stipulated as satisfactory for the present study; only two (2.8%) participants did not obtain at least 70%.

From the analysis of the six axes of the questionnaire, the axis 'What is food safety' was the one with the greatest amount of incorrect answers (n=24, 33.8%). Table 1 presents the variables associated with the nurses' theoretical knowledge about the axes.

There was a statistically significant association between the 'RF basics' axis (p=0.014) and the 'Frequency of use of RF' (p=0.014) when associated with the undergraduate degree of the professionals. The axis 'Concept of FS' also had a significant association (p=0.009) with age, with these being inversely proportional variables.

Although the variable 'time working in the FHS' was not significantly associated with any axis, professionals working 10 to 14 years in the FHS had a greater number of correct answers for all axes.

Continuing with the results, Table 2 shows the knowledge about RF, and recipes to be prepared using them. It was found that 75% of respondents answered the questions of axis 6 "Knowledge about possible foods and recipes used with RF", with a predominance of right answers for all questions. It is noteworthy that 22.5% of nurses did not recognize the preparations with cashew and *siriguela*.

**Table 2** - Distribution of correct and wrong answers related to the preparation with regional foods, Fortaleza, Ceará, Brazil, 2014

Questions	Right		Wrong	
	N	%	N	%
Does not correspond to food prepared from cashew	55	77.5	16	22.5
What is the vitamin in cashew	66	93.0	5	7.0
What food can be prepared from bananas	69	97.2	2	2.8
What food can be prepared from pumpkin	70	98.6	1	1.4
What food can be prepared from <i>siriguela</i> (jocote)	55	77.5	16	22.5

## DISCUSSION

In the present study, in general, the participants had mostly correct answers in all axes analyzed, which demonstrate that the professionals had satisfactory previous knowledge about the topics addressed. However, it is noteworthy that 24 (33.8%) participants still had poor knowledge about DNS.

The limitations regarding the knowledge of professionals about DNS were also pointed out in other studies<sup>(10-11)</sup>. It is also evidenced that nurses and physicians have difficulties in elaborating actions that help reverse unsafe food practices<sup>(10)</sup>.

Other studies pointed out that professionals had difficulties defining DNS, often relating it to the assessment of child growth and development<sup>(12)</sup>. In this context, it is necessary that professionals working with food education for the population, in the context of primary health care, take ownership of this concept, recognize its importance, and plan actions to reinforce the need for regular access and food in adequate quantity and quality for the population receiving care<sup>(12)</sup>. The lack of broad knowledge about DNS will make professionals restrict their practice, without visualizing the many factors that may be associated with the lack of food safety and its possible consequences<sup>(13)</sup>.

Further, in recent years the country has advanced in the field regarding DNS. The consolidation of legal and institutional advances has promoted significant advances in the area of public health policies. The approval and regulation of an Organic DNS Law (LOSAN), the establishment of the National DNS System (SISAN), and the National DNS Policy (PNSAN) are some of the initiatives that express the dynamism of the theme in the recent political agenda<sup>(14)</sup>.

Concerning the participants' profile, there was a significant association between age and education with better knowledge. In the present study, it was found that all participants had specialization, which significantly influenced the nurses' level of knowledge regarding the definition of regional foods and their frequency of consumption.

Specialist nurses have experience and relative professional maturity, which favors the implementation process regarding the quality of care provided. Thus, nurses are increasingly required to be able to develop their activities in the workplace<sup>(15)</sup>.

Thus, education stands out as an important variable for greater professional qualification regarding the healthy eating theme, since many nurses do not master this theme. A study conducted in Brazil stands out, with nurses working in primary care, which revealed that most professionals did not have appropriate training to meet the nutritional needs of the population receiving care: a fact that was mainly due to the low knowledge and lack of training of professionals<sup>(16)</sup>.

Thus, it is important that nurses have adequate knowledge to guide the formation of healthy eating habits beginning in childhood, respecting cultural and food identity of the various Brazilian regions, according to the National Strategy for Complementary Healthy Eating [*Estratégia Nacional para Alimentação Complementar Saudável*]<sup>(17)</sup>.

In addition to education, the age of professionals was also significantly related to the 'Concept of FS' axis; the younger the nurse, the higher their knowledge. This fact can be justified in view of the current discussions/dissemination of the DNS. It is noteworthy

that younger nurses also performed better in another study that assessed professionals' level of knowledge about basic life support<sup>(18)</sup>.

Regarding the analysis made about nurses' knowledge regarding preparations with regional foods, the questions regarding preparations with bananas and *pumpkin* obtained the vast majority of correct answers. Such knowledge is justifiable given that they are widely known foods, produced and consumed in the Northeast region, and are present in the Ministry of Health manual: *Regional Recipes for children aged 6 to 24 months [Receitas Regionais para crianças de 6 a 24 meses]*<sup>(19)</sup>, which contains preparations that can be offered to children for lunch or dinner, which are affordable and respect cultural identity.

On the other hand, in the questions regarding the types of preparations using cashew and *siriguela (jocote)*, a greater number of nurses had difficulty identifying the correct alternative when compared to their performance on the other questions. A greater ignorance of professionals in preparing recipes with these fruits was also found in a study developed with nurses who worked in the rural metropolitan area of Fortaleza<sup>(20)</sup>.

Studies have also been conducted to encourage the integration of regional food consumption into the family environment, after awareness and training of nurses about this theme. A study conducted in Ceará, for example, sought to empower nurses to use a serial album about the use of RF to promote FS<sup>(20)</sup>.

In addition to the professionals, it is essential that families are also advised about the use of RF in their daily eating habits. A research study conducted in Brazil described an educational intervention aimed at discussing RF with 70 family members of preschool children, in which participants realized how the typical foods of the region where they lived were being underused<sup>(8)</sup>. Thus, it is timely to conduct educational interventions with professionals and, especially, with patients to raise awareness of the importance of consuming RF for maintaining health and forming healthy eating habits. It is further emphasized that the use of RF can contribute to the promotion of FS<sup>(3)</sup>.

The National Household Sample Survey - Food Security [*Pesquisa Nacional por Amostra de Domicílios - Segurança Alimentar*, PNAD], conducted in 2004-2009, found that 30.2% of Brazilian households have unsafe food practices, and the northeastern region had the highest level of unsafe food practices, accounting for 46.1% of the total of the country<sup>(14)</sup>. In the meantime, it is important to note that this study was conducted with the application of the Brazilian Food Insecurity Scale [*Escala Brasileira de Insegurança Alimentar*, EBIA], which evaluates the perception of families about access to food, considering their financial conditions, and it is possible to identify the severity of the unsafe food practices affecting households, as well as the extent of their consequences.

Thus, it is necessary to include a diet based on RF, as it is an alternative to combat the unsafe food practices of families, and the nutritional deficiencies that affect most children, in addition to having a high nutritional value, low cost, and ease of access<sup>(3,5)</sup>.

The National School Feeding Program [*Programa Nacional de Alimentação Escolar*, PNAE] is a public policy that can also contribute to the inclusion of RF in children's eating habits; one of its principles is the preservation of traditional practices, culture, and local food preference. This program has a large coverage in Brazil, and uses the school environment to promote healthy eating<sup>(4)</sup>. Thus, proper application of PNAE in schools may influence the choice of food

in the population, contributing to the maintenance of FS, and ensuring adequate growth and development of students during the accelerated period of puberty<sup>(21)</sup>.

As an important member of the health care team, it is up to the nurse to have skills to intervene in various areas, such as the approach to food and nutrition, a key element of the policy for healthy child growth and development. It is also up to the nurse to conduct childcare appointments, during which types of food and socioeconomic conditions of families should be considered<sup>(22)</sup>; as well as having a role with children in the school environment<sup>(23)</sup>.

However, nurses report difficulties implementing interventions to promote healthy eating due to unfavorable professional conditions, such as maternal influence determining inadequate eating practice, lack of sufficient and qualified human and material resources, as well as the absence of continuous health education focused on the reality of the community in which professionals work<sup>(24)</sup>.

Thus, it is important that professionals participate in training focused on the practice of nutritional counseling<sup>(25)</sup>, obtaining adequate knowledge to properly guide the population receiving care. In addition, guiding the use of RF in people's daily eating routine can be an effective strategy to increase the population's food and nutritional safety indices, related to the reduction of eating disorders, and an improvement in nutritional status.

### Study limitations

Although it was implemented with all nurses working in two regions of Fortaleza, the study has the limitation of not incorporating all six regions of the city. It is noteworthy that the development of a study similar to this one in all Regional Executive

Offices allows for a better understanding about the knowledge of local nurses regarding FS and DNS.

### Contributions to nursing, health or public policy

From the assessment of the knowledge of professionals performed in the present study, one is awakened to the need to sensitize nurses and other health professionals to incorporate interventions regarding the importance of proper nutrition beginning in childhood, culminating in the empowerment of families, and consequently on the use of foods typical of one's region. It is imperative that health care professionals arouse a greater interest in improving their knowledge of RF and DSN. As they become aware of these concepts and intervene with the community in the pursuit of their daily practice, the strengthening and high quality of food and nutritional care is evident.

### CONCLUSIONS

The assessment of nurses' knowledge showed that most participants had satisfactory knowledge about RF and DNS. Among the axes evaluated, the one addressing the 'Concept of DNS' showed the greatest number of mistakes among the participants, while the 'RF characteristics' axis obtained all correct answers. There was a statistically significant relationship between participants having graduation degrees and the axes 'RF Basics and 'Frequency of use of RF'; and, between the nurse's age and the 'concept of DNS' axis. In addition, the participants had good knowledge about the recipes to be made with the RF addressed in the present study.

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