

# Healthy Eating Improvement Course for School Cooks

## Curso de Aperfeiçoamento de Alimentação Saudável para Merendeiras Escolares

Margareth Xavier da Silva<sup>1</sup>  
Débora Pinto de Oliveira Santos<sup>1</sup>  
Rogério Mello Gonçalves Filho<sup>2</sup>  
Anna Paola Trindade da Rocha Pierucci<sup>1</sup>  
Cristiana Pedrosa<sup>1</sup>

<sup>1</sup> Universidade Federal do Rio de Janeiro,  
Instituto de Nutrição Josué de Castro,  
Departamento de Nutrição Básica e Experimental.  
Rio de Janeiro-RJ, Brasil.

<sup>2</sup> Universidade Federal do Rio de Janeiro,  
Instituto de Matemática, Ciências Atuariais. Rio  
de Janeiro-RJ, Brasil.

Correspondence / *Correspondência*  
Ana Eliza Port Lourenço  
E-mail: aelourenco@gmail.com

### Abstract

*Introduction:* Schools are considered to be an optimal space for health education. The meals offered to students are an opportunity for learning and socialization. In this context, the role of the cooks goes beyond the preparation of meals, as they often need to plan the menu and replace some food items. *Objective:* This study promoted a Professional Development Course with cooks from public schools in Xerém district, in Duque de Caxias, Rio de Janeiro, Brazil, in order to broaden knowledge about healthy eating. *Methods:* The course was attended by 26 school cooks, and it was taught for four consecutive days in classrooms of the Federal University of Rio de Janeiro, at the Institute of Nutrition Josué de Castro. Previous and later evaluations about knowledge of healthy eating were performed by means of games: the Healthy Dish Game and the Pyramid Food Game. The proposed activities consisted of a lecture, development of educational materials by the participants, and a cooking workshop. The software R and the Shapiro-Wilk tests were used to evaluate if the data has a normal distribution, and the Wilcoxon test ( $p < 0.05$ ) was used to evaluate whether or not learning took place after intervention. *Results:* The participants' scores had significant improvement in the evaluation of games after the educational activities had been performed. *Conclusion:* The professional improvement course promoted knowledge among most participants, as shown by the results of the games used in their evaluation, i.e., with improved scores. Activities involving the whole school community are suggested in order to promote better quality of life and health within this group.

**Keywords:** Cooks. School. Health. School Lunches.

## Resumo

*Introdução:* A escola é considerada espaço ideal para educação em saúde. As refeições oferecidas aos alunos são uma oportunidade para aprendizagem e socialização. Ressalta-se que neste contexto, a função dos cozinheiros vai além de preparar as refeições, pois muitas vezes, precisam planejar o cardápio e substituir alguns alimentos. *Objetivo:* Este estudo realizou o Curso de Desenvolvimento Profissional com cozinheiros de escolas públicas no distrito de Xerém em Duque de Caxias, Rio de Janeiro, Brasil, para promover o aprendizado acerca de alimentação saudável. *Métodos:* O curso contou com a participação de 26 profissionais, e ocorreu durante quatro dias consecutivos nas salas de aula da Universidade Federal do Rio de Janeiro, do Instituto de Nutrição Josué de Castro. A avaliação prévia e posterior sobre os conhecimentos de alimentação saudável ocorreu por meio de jogos: o Jogo Prato Saudável e o Jogo da Pirâmide dos Alimentos. As atividades propostas foram palestra, elaboração de materiais educativos pelos participantes, e oficina de culinária. Foram utilizados o software R, e os testes de Shapiro-Wilk para verificar se os dados apresentavam distribuição normal e Wilcoxon ( $p < 0,05$ ) para verificar se houve aprendizado após intervenção. *Resultados:* Os participantes obtiveram melhora significativa em suas pontuações nos jogos avaliativos após as atividades educativas. *Conclusão:* O curso de aperfeiçoamento profissional promoveu o conhecimento da maioria dos participantes, que foi demonstrado pelos resultados dos jogos usados avaliativos, com melhora nas pontuações. Sugere-se atividades que envolvam toda a comunidade escolar para promoção de melhor qualidade de vida e saúde para este grupo.

**Palavras-chave:** Merendeiras. Escola. Saúde. Alimentação Escolar.

## Introduction

The increase in the prevalence of overweight in Brazilian children and adolescents is considered to be a public health problem, which can cause damage to health and, hence, be a predictive factor of obesity in maturity.<sup>1</sup> Eating habits change with higher saturated fat intake,<sup>2</sup> processed foods, sugar and salt,<sup>3</sup> and a reduction in the consumption of fruits and vegetables,<sup>4</sup> and these are some of the factors that promote a transition in nutrition, where there is a reduction of malnutrition and increasing incidence of overweight and obesity in the population, with the risk for appearance of chronic diseases.<sup>5</sup>

Most Brazilian children and adolescents are enrolled in school,<sup>6</sup> and schools must assume responsibility for health education because of their social role and the potential for developing systematic and continuous work.<sup>7</sup> Moreover, schools have to act as an important social group in the lives of children, as they are considered as a privileged space to promote health, given the fact they are a place where people spend much of their time and establish friendship and trust relationships. In addition, the adequacy of school attitudes is associated with values that the whole school community transmits to students in this environment.<sup>8</sup>

In 2004, the Ministry of Education published a document entitled “Towards a policy of valuing workers in education: on the scene, school officials”. This document has focused on the concept that all members of the school environment are involved in the educational process. In this sense, the work of schools cooks<sup>9</sup> is recognized as an activity that goes beyond preparing and distributing meals to school; they are also potential agents of education, who should receive attention, regular training and recognized by the school community.<sup>10,11</sup>

This study developed the Professional Development Course (PDC) with cooks from public schools in the Xerém district in Duque de Caxias, Rio de Janeiro, Brazil, in order to promote knowledge of healthy eating, an issue that is relevant on the daily work of these professionals.

## Methods

The PDC was a pilot project, conducted by researchers at the Food Development Laboratory for Special and Educational Purposes (DAFEE) at the Nutrition Institute Josué de Castro (INJC) of the Federal University of Rio de Janeiro (UFRJ). It was aimed at developing educational activities with school cooks about food and healthy eating, relative to their duties in the school environment. The Education Department of Duque de Caxias released the PDC in Xerém’s district schools, and it was attended by 39 professionals.

The sampling method used for calculation was sampling from a finite population, with a confidence level of 95% and 5% error, considering  $p = 0.95$ , according to the amount of participation in previous events. Then, after calculations, simple random sample was chosen with 26 professionals (81.25%), who fully attended the event. A nutritionist coordinated the course with Nutrition undergraduate students.

The technique used in this study was based on the Rediscovery Oriented Method, which assumes that learners have some prior knowledge of the subject to be developed. In this case, the course coordinator is expected to guide the activities, rather than provide ready answers to questions that arise. Apprentices are expected to act as researchers, adding new information to their previous knowledge.<sup>12</sup>

The PDC lasted for four days in a row, in the morning period, with the following activities:

1<sup>st</sup> day – the participants autofilled forms with personal data; two games were played to assess knowledge of food and healthy eating. Both games have been validated in the research of Da Silva et al., 2013.<sup>12</sup> The first game was the Healthy Dish Game (HDG), which indicates that a healthy lunch should be drawn, as it should be offered at school,<sup>4</sup> with a food item from each group: vegetables, meat, cereals and beans. The second game was the Pyramid Food Game (PFG), a graphical representation of the Food Guide,<sup>13,14</sup> which separates foods into groups. The HDG was considered correct when it was composed of one food of each group: vegetables, meat, cereals and beans; each right food scored 2,5 points and the PFG scored 1,25 points for each correct picture placement in the pyramid, amounting to 10 points. The educational activity (EA) would be considered satisfactory if the cooks' final score of the game were equal to or above 7.0 and higher than in the first evaluation. A lecture was given with the theme “Healthy Eating”, which used the reference guidelines (EA) contained in the Food Guide for the Brazilian population;

2nd day- the cooks were organized into groups for development of teaching materials that could disseminate healthy eating at school;

3rd day- the participants presented the materials they had prepared, which were evaluated by all members of the PDC. A second evaluative round of games was performed, and recipes were chosen for the cooking workshop on the last day of the meeting;

4th day- a cooking workshop was held with food preparations chosen by the participants. The preparations included chicken pizza, carrot cake and pineapple juice with mint; also, there was food tasting made by the cooks.

The statistical analysis used the software R and the Shapiro-Wilk test to check any possibility of normal sample distribution, and the Wilcoxon signed-rank test was used at a significance level of 5%.

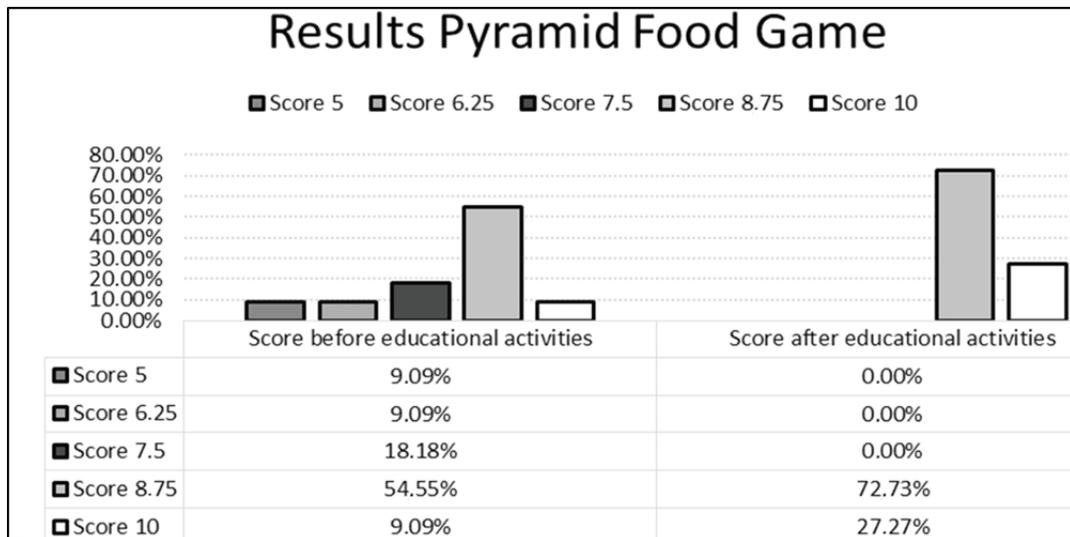
The study was approved by the Research Ethics Committee - CONEP / IESC (Opinion 79/2009 - Process: 0026.0.239.000-09; 16/2009) of the Universidade Federal do Rio de Janeiro. All cooks signed the an Informed Consent Form and Informed document and authorized the use of their image for academic purposes.

## Results

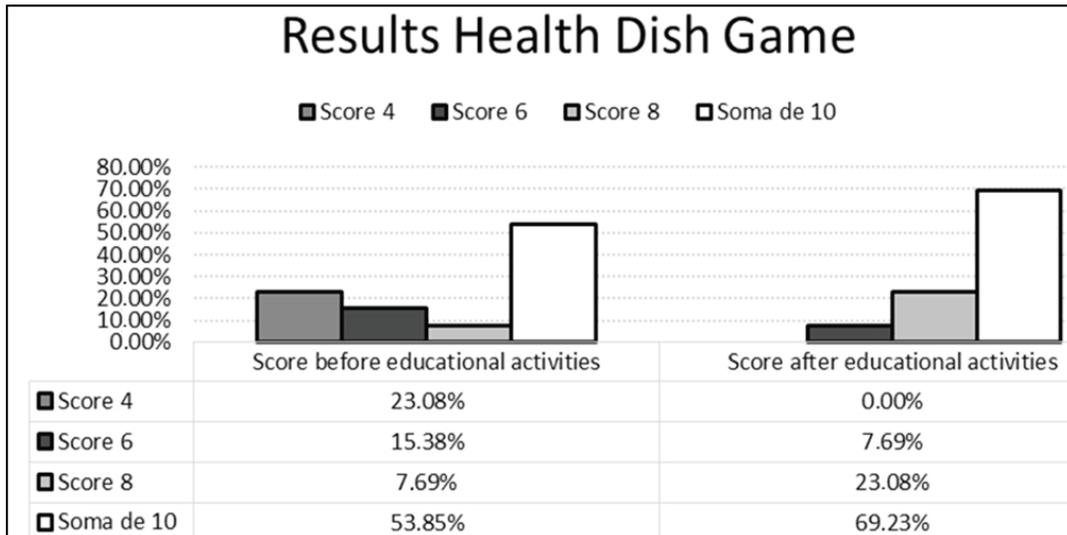
The cooks answered a questionnaire about level of education: 38.9% of the participants finished high school, 33.3% finished primary school, 16.7% had not completed their education and 11.1% did not inform their educational level. One question asked the participants whether they had

previously participated in another food-oriented course; half of the cooks had not done yet. Last but not least, they were asked what they expected from the course: 66.7% expected to acquire new general knowledge, 22.3% wished to learn more about healthy eating, 5.5% wanted to improve their work and their own diet and 5.5% did not respond.

Prior to the EA, the cooks' scores ranged from 5 to 10 in the FPG, with the highest percentage of grades being 8.75 (54.55%) and 7.5 (18.18%), while scores after the EA were 10.00 (27.27%) and 8.75 (72.73%). The HDG had good results as well; the scores increased after the EA. In the first moment, 53.85% of the participants scored 10, and after the EA, 69.23% of them achieved the top score. Figure 1 shows the results for the Pyramid Food Game, after and before the educational activities, and Figure 2 shows the results for the Healthy Dish Game.



**Figure 1.** Results of the Food Pyramid Game before and after the educational activities (n=26).



**Figure 2.** Results of the Healthy Dish Game before and after the educational activities(n=26).

The Shapiro-Wilk test was held to assess the normality of the sample relative to the Pyramid Game before the educational activities ( $p = 0.03293$ ) and after the educational activities ( $p = 0,00001$ ). The Shapiro-Wilks test was applied before the educational activities ( $p = 0,00156$ ) and after the educational activities ( $p = 0,00018$ ). They were both rejected at a significance level of 5%. Because of the rejection of normality, the unilateral non-parametric Wilcoxon signed-rank test was used to check if the cooks learned the content addressed in the culinary activities.

For the Food Pyramid and the Healthy Dish games, the unilateral Wilcoxon signed-rank test showed a significance level of 5%; there was improvement in the scores, which confirmed that the activities were effective and hence the cooks learned.

## Discussion

Most of the cooks had completed high school (Figure 1) and they had a desire to learn about healthy eating, which may have favored the performance of the cooks at the PDC. Tanajura et al.<sup>15</sup> described the importance of qualification for the job of food handlers in a school environment, which will reflect the quality of nutrition and the health of the professionals themselves. The participants of the PDC have shown interest in the lecture given on the first day of the meeting by asking questions

and making comments. This interested behavior confirms what they had reported in the personal data form, i.e., the search for more information for their personal and professional life. Bellizzi et al.,<sup>16</sup> made a literature review about the training of food handlers' in food and nutrition units in the period 1994-2003 and found that the prevailing teaching strategies were lectures, combined with group dynamics activities which resembles the methods used in the present study.

When the course participants presented the works they had produced on the second day of the PDC, all their posters clearly showed the contents, and they made a creative use of the material available and showed to have knowledge of the subject "Healthy Eating". The theoretical content of the presentations included the knowledge acquired during the lecture on the first day of the meeting. The descriptive study of Leite et al.,<sup>17</sup> whose object of analysis was a course attended by cooks from 97 state schools in Salvador (BA), showed that the construction of a participatory proposal with cooks was extremely important to successful training in safe and healthy food in schools, providing recognized and motivation of professionals.

Bezerra et al.<sup>18</sup> conducted a study with elementary school teachers who recognized the food pyramid as an appropriate material to teach food groups. In the present study, it was used as an evaluative game of knowledge that signaled the learning about food groups as well; however, 61.5% of the participants had doubts in the classification of the beans, considering that they belonged to the cereals group. Yokota et al.<sup>19</sup> had similar difficulties in assembling the food pyramid, where the group of carbohydrates (cereals, tubers and pasta) had the highest percentage of errors.

Information on how to compose a healthy dish for a great meal (HDG) occurred heterogeneously among the cooks before the EA, but as the average scores improved in the second application of this game, it was considered that the intervention improved awareness of the subject (Figure 2). The study of Assão et al.<sup>20</sup> proved that the cooks from public schools in Guarulhos / SP expressed concern over the menu which was offered to school, because, they often needed to change the composition of the menu, although it was originally prepared by a nutritionist. These professionals require training to acquire expertise in meal composition.

Evaluations with fun games showed that the cooks of this study needed to complement their knowledge of food groups and hence prepare a healthy dish. Often, the information used in the work environment is part of personal experiences. Thus, nutritional education in schools should develop participatory and playful activities in a context recognized by the apprentices, because the approximation of teaching with the reality of the group involved promotes the construction of knowledge.<sup>21</sup> It was observed that in the HDG, most cooks drew vegetables, which corroborates the study of Barbosa et al.,<sup>22</sup> in which interviews were conducted with public school officials of an elementary school in the Federal District. The question about the importance of fruit and vegetables had an unanimous answer, i.e., one needs to consume these food groups to have a healthy life.

The cooks chose the menu and organized themselves into groups during the preparation of recipes in the cooking workshop on the last day of the meeting. They prepared a snack with chicken pizza, vegetable cake and pineapple juice with mint, and proceeded to food tasting at the end of the event. The PDC was considered to be excellent by the participants, who reported the desire to use what they have learned in their work at school, and their expectations of training were met. Yokota et al.<sup>19</sup> demonstrated that interventions with nutrition education and nutrition in the school environment are helpful to promote awareness of the whole community of an educational establishment, and they require encouragement of educational practices, according to the guidelines of the National Policy Food and Nutrition. Arantes et al.<sup>23</sup> also found that the training of cooks helped clarify the importance of school meals on students' eating habits.

## Conclusion

The PDC with the cooks have shown to be satisfactory, both in improving their knowledge about food and healthy eating, as well as in meeting the expectations of the participants, who reported to be satisfied with the analyzed content. Because of the importance of these professionals in their activity in public schools, serving most of the young population, more educational project initiatives should be developed for training of cooks while involving the whole school community.

The methodology of intervention was elaborated according to the recommendation of the Food Guide of 2006, however, the edition of the most recent Guide, corroborates with the indication of practices of culinary workshops as they occurred in this study.

Although the results of the cooks' learning with the course were statistically significant, the sample of participants was small, which may be a limitation for the generalization of these results. It is suggested to carry out studies with a larger sample of this group of professionals.

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## Contributors

Silva MX participated in the literature review and the drafting of the article; Santos DPO, translated the text; Gonçalves Filho RM made the statistical analyses; Pierucci AP and Pedrosa C advised the conduction of the study.

Conflict of Interest: The authors declare no conflict of interest.

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