

## IMPACT OF THE TRAINING OF COMMUNITY HEALTH WORKERS ON FOOD EDUCATION: METHODOLOGICAL ASPECTS AND POTENTIALITIES

Impacto da capacitação de agentes comunitários de saúde em educação alimentar: aspectos metodológicos e potencialidades

Impacto de la formación de agentes de salud de la comunidad en la educación alimentaria: aspectos metodológicos y potencialidades

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### ABSTRACT

**Objective:** to analyze the methodological aspects and the potentialities of the study “Impact of Training of Community Health Workers (CHW) in Food Education (FE) - Vitória/ES”. **Methods:** the CHW of 25 Health Units (HU) were invited and evaluated at the Cardiovascular Research Center. Four steps were performed: Health and nutrition assessment of CHW; Qualitative study; Training in FE; Reevaluation. **Results:** biochemical and anthropometric data, food consumption, clinical exams, urinary electrolytes and physical tests were collected. Qualitative study was done to survey the perception of CHW about the study. HU were randomized into two groups (intervention and control). The intervention group participated in a training in FE, based on the Food Guide for the Brazilian Population. At the end of the training, all CHW were reevaluated to identify changes in health conditions. **Conclusion:** this study can contribute to the planning, implementation, monitoring and evaluation of specific actions in primary care.

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**DESCRIPTORS:** Community health workers; Health education; Food and nutrition education.

## RESUMO

**Objetivo:** analisar os aspectos metodológicos e as potencialidades do estudo “Impacto da capacitação de Agentes Comunitários de Saúde (ACS) em educação alimentar (EA) - Vitória/ES”. **Métodos:** os ACS de 25 Unidades de Saúde (US) foram convidados e avaliados em Centro de Investigação Cardiovascular. Foram realizadas quatro etapas: Avaliação da saúde e nutrição dos ACS; Estudo qualitativo; Capacitação em EA; Reavaliação. **Resultados:** foram coletados dados bioquímicos e antropométricos, de consumo alimentar, exames clínicos, eletrólitos urinários e testes físicos. Estudo qualitativo realizado para levantamento da percepção dos ACS sobre o estudo. As US foram randomizadas em dois grupos (intervenção e controle). O grupo intervenção participou de uma capacitação em EA, tendo como base o Guia Alimentar para a População Brasileira. Ao final da capacitação, os ACS foram reavaliados para identificar mudanças nas condições de saúde. **Conclusão:** este estudo pode contribuir para o planejamento, monitoramento e avaliação de ações específicas na atenção primária.

**DESCRIPTORES:** Agentes comunitários de saúde; Educação em saúde; Educação alimentar e nutricional.

## RESUMEN

**Objetivo:** analizar los aspectos metodológicos y las potencialidades del estudio “Impacto de la capacitación de Agentes Comunitarios de Salud (ACS) en educación alimentaria (EA) - Vitória/ES”. **Métodos:** el ACS de 25 Unidades de Salud fue invitado y evaluado en el Centro de Investigación Cardiovascular. Se dieron cuatro pasos: Evaluación de la salud y nutrición; Estudio cualitativo; Entrenamiento en EA; Reevaluación. **Resultados:** se recogieron datos bioquímicos y antropométricos, consumo de alimentos, exámenes clínicos, electrolitos urinarios y pruebas físicas. Se realizó un estudio cualitativo para evaluar la percepción de la ACS sobre el estudio. Se aleatorizaron en dos grupos (intervención y control). El grupo de intervención participó en un entrenamiento basado en la Guía de Alimentos para la Población Brasileña. Al final de la capacitación, los ACS fueron reevaluados para identificar cambios en las condiciones de salud. **Conclusión:** este estudio puede contribuir a la planificación, monitoreo y evaluación de acciones en atención primaria.

**DESCRIPTORES:** Agentes comunitarios de salud; Educación en salud; Educación alimentaria y nutricional.

## INTRODUCTION

According to the World Health Organization (WHO), about 80% of deaths from chronic non-communicable diseases (NCD) in the world occurred in low or middle-income countries.<sup>1,2</sup> Among the nutritional factors associated with NCD are obesity, low-nutritional quality food, and harmful use of alcohol.<sup>1</sup> In turn, obesity already reaches alarming proportions in Brazil.<sup>3,4</sup> Besides being a disease of great social and economic impact, the treatments represent enormous expenditures in the health sector.<sup>5</sup> Because it is a chronic outcome of multifactorial origin, it is difficult to prevent and control. Moreover, it is considered one of the most important risk factors for other complications, such as diabetes mellitus, hypertension, cardiovascular diseases, among others.<sup>3</sup>

One of the goals for the reduction of NCD is the improvement of food quality through some strategies, such as the reduction of consumption of ultra-processed and industrialized condiments, reduction of sugary beverages and moderate use of alcohol. Achieving these goals is a challenge in Brazil, but it is believed to be a good strategy to incorporate them into primary care, since it is the gateway to the health system.<sup>6</sup> Moreover, it is in this scenario that it is possible to develop health and food education (FE) actions from childhood.<sup>6</sup>

It becomes an emergency to modify the obesogenic scenario, therefore, acting in the primary care field, encouraging and promoting healthier eating behaviors is one of the ways, but not the only one. Within this perspective, it is important to create collective and individual opportunities and alternatives, which will subsidize and encourage decisions for healthy choices, even if the final decision is individual and family.<sup>7</sup>

Food is a social practice resulting from the integration of the biological, socio-cultural, environmental and economic dimensions. Acting on it therefore also requires an integrated approach that takes into account the behaviors and attitudes involved in food choices, preferences, preparation and consumption. In turn, the critical educational action, contextualized, and that values popular knowledge and practices, can present itself as a strategy for the reduction of industrialized food in general, salt and sugar, as well as for the increase of healthy food, objects of this proposal of intervention and study. Despite the lack of consensus on lasting and effective results in studies conducted in recent decades, nutritional interventions aimed at reducing the consumption of excessive amounts of sugars and increasing physical activity seem promising.<sup>8</sup>

This proposal is justified from the perspective of facing the great challenge of incorporating the theme of food and nutrition in primary care, with emphasis on healthy eating and health promotion, recognizing the family as a space conducive to the formation of healthy habits and the construction of citizenship. Considering, also, that shared responsibility is the way to build ways of life that have as a central objective the promotion of health and disease prevention, it is of fundamental importance to evaluate this process and its impact using appropriate indicators in order to identify the changes that have occurred from environmental education actions.

Community Health Agents (CHAs) act as community and health service link in primary care<sup>9</sup> and, taking into consideration the work process,<sup>10</sup> as well as the lack of studies with this population group, there is a need to investigate the health conditions of these professionals, besides promoting healthier eating behaviors and living habits.

In this work the methodological aspects and potentialities of the study “Impact of training of community health agents in food education - Vitoria/ES” (CACEA-ES Study) will be analyzed.

## METHODOLOGY

### Study design

It is an intervention study with CHA, from 25 to 72 years old, of both sexes, who work in the Family Health Units (FHU) and Basic Health Units (BHU) in the city of Vitória/ES.

The study was developed in four stages: 1) Health and nutrition evaluation of CHAs (October 2018 to March 2019); 2) Qualitative study (March 2019); 3) Training of CHAs in FE (May to August 2019); 4) Re-evaluation (September to December 2019). The training for the control group was done after the reevaluation.

### Sampling and selection of participants

According to the payroll data available through the Transparency portal of the City of Vitoria,<sup>11</sup> the City had 375 CHAs in September 2018, according to Table 1, distributed in 23 FHU and 2 BHU. At first, the CHAs were contacted by researchers in the HU to present the research and schedule the data collection, with participation on a voluntary basis.

**Table 1** - Quantitative of Community Health Agents in the Municipality of Vitória/ES and adherence to the study, according to allocation group. CACEA Study, ES, Brazil, 2018-2019

ALLOCATION GROUP							
Controle				Intervenção			
Health Unit	Nº CHAs*	JOIN	% JOIN	Health Unit	Nº CHAs*	JOIN	% JOIN
Praia do Suá	9	7	77,7	Santa Luíza	14	2	14,3
Forte São João	15	7	46,6	Jardim da Penha	27	13	48,1
Maruípe	13	9	69,2	Grande Vitória	22	18	81,8
São Cristóvão	21	11	52,4	Fonte Grande	9	7	77,7
Bonfim	14	8	57,1	Vitória	13	8	61,5
Bairro da Penha	16	15	93,7	Ilha do Príncipe	6	5	83,3
Itararé	13	6	46,2	Santa Marta	16	11	68,7
Resistência	11	11	100	Andorinhas	6	6	100
Conquista (São Pedro V)	16	10	62,5	Bairro República#	19	17	89,5
Santo Antônio	22	15	68,2	Consolação	25	20	80,0
Santo André	17	16	94,1	Jesus de Nazareth	7	5	71,4
Alagoano (Favalessa)	11	10	90,9	Bairro do Quadro (Avelina)#	15	9	60,0
				Ilha das Caieiras	18	17	94,4
<b>TOTAL</b>	<b>178</b>	<b>125</b>	<b>70,2</b>	<b>TOTAL</b>	<b>197</b>	<b>138</b>	<b>70,1</b>

CHAs= Community Health Agents

\*Source: Vitoria City Hall, 2018. #Basic Health Units (BHU)

### Ethical considerations

The study was approved by the Research Ethics Committee of the Universidade Federal do Espírito Santo (UFES) (CAAE: 88008418.6.0000.5060; opinion: 2.669.734) and was conducted in accordance with the principles of the Declaration of Helsinki. Previously, permissions from the Municipal Health Secretary of Vitória/ES and the State Health Secretariat of Espírito Santo were obtained. This investigation is registered in the World Health Organization under the UTN - U1111-1232-4086 and submitted to the Brazilian Registry of Clinical Trials under the number REQ: RBR-4z26bv. The CHAs who accepted to participate in the research signed the Informed Consent Form.

## RESULTS

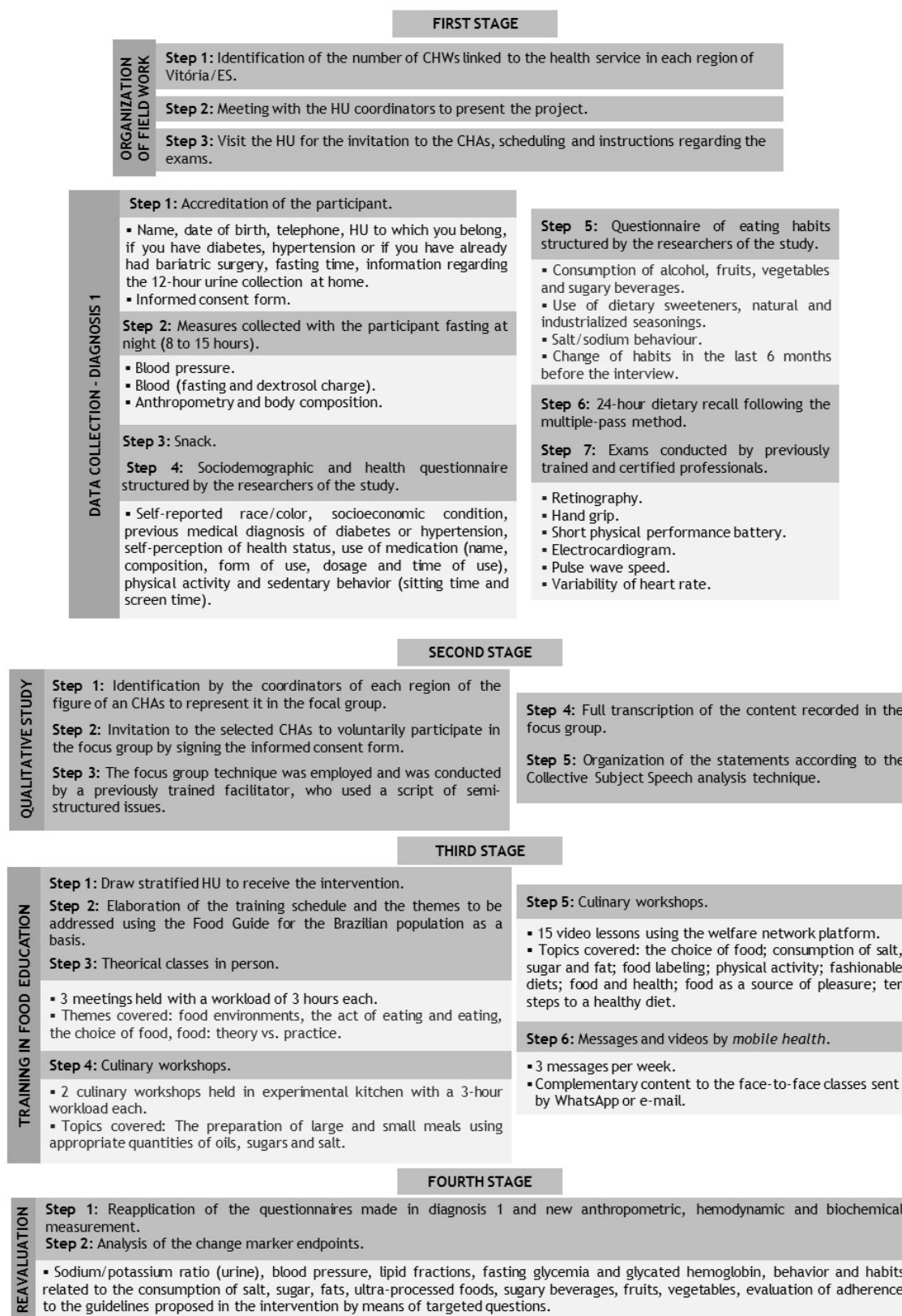
### Data Collection

The CHAs received written and verbal guidelines for clinical exams and interviews at the UFES Cardiovascular Research Center. Data collection occurs in the morning by a certified team and under supervision, according to standardized techniques.

## Stages of research

Figure 1 summarizes the sequence of the study steps, described in detail below.

**Figure 1** - Flowchart of the intervention study steps. CACEA Study, ES, Brazil, 2018-2019



## Stage 1 - Assessment of the health and nutrition of CHAs

### *Socioeconomic and health evaluation*

The face-to-face interview was interspersed with the clinical exams. The demographic, socioeconomic and health data were obtained through a structured questionnaire. Data were collected on schooling, self-reported race/color, income, marital status, previous diseases diagnosed by a doctor and use of medication. For the socioeconomic classification, the criteria of the Brazilian Association of Research Companies were used.<sup>12</sup>

Physical activity was estimated from the International Physical Activity Questionnaire (IPAQ) long version, validated in Brazil, in the domains of leisure-time physical activity (LTPA) and physical activity of displacement (PAD).<sup>13</sup> The pattern of physical activity, in its different domains, was reported in minutes/week, consisting of the multiplication of weekly frequency by the duration of each activity performed.

The time spent sitting (ST) was evaluated using 2 questions from IPAQ's ST domain to identify how many hours per day, on weekdays, and at the weekend, the individual remained seated. This variable was calculated by multiplying the ST on weekdays and weekends. The sum of these values was performed and then divided by seven, corresponding to the average hours/day.

The time spent in front of screen devices was analyzed through questions about their use in work/study moments and in free time (it was considered smartphone, television, computer and videogame). From the sum of the screen times at work/study and free time, the average time spent in front of the screen per day was calculated.

### *Evaluation of food consumption, behavior and eating habits*

For the evaluation of food consumption the 24-hour recall (R24h) was used. To obtain the food composition, food and preparations consumed were applied two R24h before, and two R24h after the training. The R24h included weekdays and weekend days. During the application of R24h, the participants were guided to report all foods and beverages consumed in the 24 hours of the previous day.<sup>14</sup> The nutritional composition of food items will be estimated from their identification in the Nutrition Data System for Research - NDSR, of the University of Minnesota,<sup>15</sup> besides the Tabela Brasileira de Composição de Alimentos (TACO) and the State University of Campinas - UNICAMP.<sup>16</sup> For the evaluation of food habits, a structured questionnaire was used and built by researchers to investigate the frequency

of consumption of ultra-processed food/drinks, alcoholic beverages, industrialized condiments and added salt, as well as a tool to evaluate food behavior.<sup>17</sup>

### *Evaluation of sodium, potassium and sodium/potassium ratio consumption*

A validated methodology was used to evaluate electrolytes (sodium and potassium) in 12-hour night urine.<sup>18</sup> The sodium/potassium ratio indicator (Na/K)<sup>19</sup> will be used to evaluate the quality of the diet, since healthy foods (fruits and vegetables) are rich in potassium. On the other hand, reducing the amount of sodium may be an indication for the reduction of ultra processed foods, added salt and industrialized condiments.

The work carried out by our research group has shown that only a measure taken over a year can accurately estimate the usual consumption of sodium and potassium.<sup>20</sup> Therefore, the Na/K ratio will be used as a marker of change in the consumption of sodium, potassium or both before and after the intervention.

For 12 hour urine collection, the participants received a plastic cup with a capacity of 500 mL, a plastic bottle (capacity of two liters) and a questionnaire with information about the correct collection procedure. The participant was guided to urinate at 7 pm and all urine produced should be collected by 7 am the next morning. The urine should be kept in a refrigerator during the collection and after its completion.

On the morning of the end of the collection the participants took the bottle, with the 12 hour questionnaire of urine collection instructions. Urine vials with a collection period of between 10 and 14 hours, with diuresis of more than 250 mL in 12 hours and no reports of major losses were accepted. Participants with collection errors were reapplied instructions on the collection protocol and a new meeting was scheduled for delivery of the urine bottle. After admission, the delivered material was properly identified and the urinary volume measured with a graduated specimen (1000 mL capacity and 10 mL accuracy). All data were recorded and then the urine was analyzed in the laboratory.

The sodium and potassium ions were quantified in the 12-hour urine, and then estimated at 24 hours, according to the equation obtained in the validation study of our research group.<sup>18</sup>

### *Clinical Examinations*

Table 2 summarizes the procedures and protocols of clinical exams.

**Table 2** - Clinical exams performed with Community Health Agents of the Municipality of Vitória/ES. CACEA Study, ES, Brazil, 2018-2019 (Continued)

Evaluation	Parameter	Equipment	Protocol
<b>Anthropometric</b>	Weight	Electronic scale (precision of 100g maximum capacity for 150 kg)	Lohman; Roche, Martorell (1988). <sup>21</sup>
	Stature	Wall stadiometer (0.1 cm scale)	Lohman; Roche, Martorell (1988). <sup>21</sup>
	Waist circumference	Inextensible tape measure	Lohman (1992). <sup>22</sup>
	Hip circumference	Inextensible tape measure	Lohman; Roche, Martorell (1988). <sup>21</sup>
<b>Body composition</b>	Percentages of total body fat and fat free mass	Vertical electric bioimpedance (Inbody 230 scale)	The test was not performed on individuals who have pacemakers and metal prostheses on the upper and/or lower limbs. The exam was performed in fasting and the participant was guided to empty the bladder, remove all metal props, socks, and shoes to climb the scale. After being on the scale with the feet in the indicated place and in horizontal position, he was guided to hold two metallic rods to start the exam.
<b>Biochemistry</b>	CBC, Urea nitrogen, Uric acid, Creatinine, Total cholesterol and fractions, Triglycerides, T3, T4 and TSH, Fasting insulin, Fasting and after overload blood glucose	Samples of 10 ml of blood were collected by venous puncture in the antecubital fossa of the participants fasting (8 to 15 hours)	Standard operating techniques - WHO (2010). Participants with medical diagnosis of diabetes and/or who have already undergone bariatric surgery or refused to ingest the load of dextrosol (75g) were exempted from a new blood collection performed after 120 minutes. The blood collection was sent to a central laboratory (Laboratório Tommasi - Vitória, Brazil) and all dosages were performed with commercially available kits
<b>Hemodynamics</b>	Blood pressure	Automatic device - OMRON (HEM model - 705 CP)	Measure measured in the left arm. Before starting the measurement, the participant was invited to empty the bladder and stay at rest for 5 minutes. He was also instructed to sit in an upright position in a comfortable chair with his back relaxed and supported on the backrest, without crossing his legs, with his left arm on the mobile support and free of clothes at arm height. The circumference of the arm was measured to assess the most appropriate cuff. Three PA measurements were performed with one minute interval between them.
<b>Electrocardiogram (ECG)</b>	12-lead basal ECG	Digital device (Mortara WAM model; Rscribe v.5.14.5201 software) with automatic reading of heart rate, duration, amplitude and axes of P, QRS and T waves, in addition to QT, QTc and QT dispersion intervals	Participant was invited to remove metal props before the exam. After the identification of the points for the attachment of the electrodes, a light abrasion of the skin was made with gauze soaked in 70% alcohol. The precordial electrodes were positioned after obtaining V4 with square.
<b>Heart Rate Variability (HRV)</b>	Variability of heart rate	Digital electrocardiograph (Micromed, Brazil) with signal capture at 250 Hz	The exam was performed with the participants in supine position. The records were obtained in single derivation (usually D2). Specific software (WinCardio) was used to generate the time series of the R-R intervals.

Evaluation	Parameter	Equipment	Protocol
<b>Arterial stiffness</b>	Pulse Wave Speed (PWS)	Validated automatic device (Complior, Artech Medicale, France)	The BP was gauged in the supine position (oscillometric device Omron HRM705CP) on the right arm. The measurement of the distance from the sternum wishbone to the right femoral pulse and from the sternum wishbone to the mandibular arch was performed with inextensible tape measure. Pulse sensors were positioned in the right carotid and femoral arteries, allowing the visualization of pulse waves. Software identified the pulse waves. The PWS was calculated by dividing the distance from the wishbone to the femoral pulse by the time difference between the carotid and femoral pulses and by the arithmetic mean obtained in ten consecutive cardiac cycles in regular heart rhythm.
<b>Retinography</b>	Bottom of the eye	Jamar® handheld dynamometer (Sammons & Samp; Preston, USA) with a maximum capacity of 90 non-medriac Retinograph (CR-1, Canon, Japan), equipped with 10 megapixel digital camera (Canon EOS 40 D)	After natural dilation of the pupils (four minutes in a dark room), two 45° images of the retina of each eye were obtained, one centered on the optical disc and the other on the macula.
<b>Maximum grip force</b>	Hand Grip	Jamar® handheld dynamometer (Sammons & Samp; Preston, USA) with maximum capacity of 90 Kgf	Participant sitting in a chair with backrest and forearm support. Two measurements were performed on the dominant hand. In cases of pain or impossibility to perform the measurement (surgery on the hand, arm or forearm less than 60 days) on the dominant hand, the measurement was made on the non-dominant hand.
<b>Short physical performance battery</b>	Walking speed, lower limbs muscle strength and static balance	Three independent tests	Guralnik et al. (1995). <sup>24</sup>

## Stage 2 - Qualitative study

A qualitative study was made for the design and qualification of the educational intervention program. It was carried out a survey of the perception of the CHAs on the object of the study, the difficulties that can have to institute a healthy and adequate alimentation, and on the characteristics that should have the instructional material of the educational intervention. Only the CHAs of one of the HU, selected for convenience, who had authorized the study, participated in this stage. The inclusion criteria for this phase are the same for the other phases of the study.

This stage was carried out in a previously scheduled meeting with the participants, in which the focal group technique was employed, conducted by a trained facilitator, who used a script of semi-structured questions: 1) the participants' perception of healthy and adequate food, and their motivation to modify it, 2) the main barriers to the adoption of adequate food; 3) how (methods/techniques) it would be better to present/develop an educational intervention among the CHAS.

With the authorization of the participants the meeting was recorded for later transcription. The oral testimonies resulting from the interviews, after transcription, went through floating reading, which allowed delimiting the answers for each of

the questions formulated, regardless of the exact moment in which the subjects' thoughts and perceptions were expressed during the interview. This is because, when these are of the open type, they give rise to less organized manifestations and feelings, which requires an effort to organize the discursive data, preliminary to their processing and analysis.

The statements were tabulated and organized according to the Collective Subject Speech Analysis (CSSA) technique, which consists of a sequence of methodologically defined operations.<sup>25,26</sup>

## Stage 3 - CHAs training in food education

The pedagogical approach of the intervention was based on the principles of environmental education, proposed in the Food and Nutrition Education Framework for Public Policies,<sup>27</sup> and the Food Guide for the Brazilian Population.<sup>28</sup> The methodology adopted is based on the application of various activities with different approaches, which will be described below, totaling a workload of 40 hours.

To select the intervention group, a stratified drawing was conducted considering the level of proximity to the HU and sharing of territory of the families served in the Family Health Program in order to reduce contamination among the groups. Thus, each HU/set of HU received an identification number

and the draw was made through the site Sorteador®. Table 1 shows the division of HU into control and intervention groups.

### ***Wheels of conversations***

Three theoretical-practical face-to-face meetings were held (3 hours per meeting). The following themes were approached: food environments, the act of eating and comensality, the choice of food; food: theory vs. practice. The methodology used consisted in providing an active learning through the expository classes of 40 minutes, followed by practical/dynamic activities of groups, to make them confront what is proposed in the theory with what can in fact be implemented. In addition, some reflections were proposed, such as changes to improve the food environment at home and at work, and actions to implement healthy eating.

### ***Mobile health strategy (mHealth)***

In the mHealth proposal, text messages, interactive messages, videos, and e-mail were used as intervention tools.<sup>29</sup> mHealth educational actions were sent to participants weekly, at least 2 messages at a time/week. The content of the messages and videos was intended to complement the topics covered in the face-to-face meetings, so materials were developed containing, among others: myths and truths involving food; the risks of eating high in sodium, sugar, and fat; the use of salt substitutes; and the benefits of consuming food from the harvest. The total workload of the educational messages and additional reading was 12 hours.

### ***Culinary workshops***

As a resource for the active participation of the participants in the process of modifying food behavior, 2 culinary workshops (3 hours per workshop) were held in experimental kitchens with the participation of 20 CHAs per workshop. The following challenges were proposed: 1) How to prepare large meals with low salt content and substitutes for industrialized spices? 2) How to prepare cakes and desserts without sugar? 3) How to cook without ultra-processing? 4) How to increase the consumption of vegetables and fruits in the daily life of the family?

### ***Distance Learning Classes (DLC)***

Fifteen video lessons were given using the platform of the Rede Bem Estar da Prefeitura Municipal de Vitória (Vitória City Hall's Wellness Network) with several themes, such as: Choice of healthy food; reduction of salt, sugar and fat consumption; food labeling; physical activity; fashion diets; food and health; food as a source of pleasure; ten steps to a healthy diet. Each class had, on average, 15 minutes, besides the additional reading of the complementary material, totaling, therefore, a workload of 10 hours.

## **Stage 4 - Re-evaluation**

After the intervention period, the impact on the investigated outcomes was evaluated through the reapplication of the questionnaires presented in the first phase and new anthropometric, hemodynamic and biochemical assessment.

The marker outcomes of changes were the Na/K (urinary) ratio, blood pressure, lipid fractions, fasting glycemia and glycated hemoglobin, behavior and habits related to the consumption of salt, sugar, fats, ultra-processed foods, sugary beverages, fruits, vegetables and vegetables.

To evaluate the adherence to the guidelines the following questions were applied: 1) Did you receive educational material? 2) Did the material present clarity? 3) Did you like the material? 4) Did you follow any of the recommendations? 5) In the last year did you include any food in your food routine? If yes, for what reason? 6) In the last year did you exclude any food or product from your diet? If yes, for what reason? 7) Have you incorporated the use of herbal salt in your food routine? 8) Have you incorporated the use of homemade vegetable stock in your food routine?

## **DISCUSSION**

The CACEA-ES study is a pioneer in the literature, since it aims to carry out a health and nutrition diagnosis of the CHAs of Vitoria/ES, as well as to provide training in HE and identify the impact on health outcomes. To this end, appropriate methodologies were used to collect data that reinforce their internal validity.

The strengths of the CACEA-ES study refer to innovative research on various health outcomes, sociodemographic, lifestyle and food characteristics with CHAs in Vitória/ES, since, according to our knowledge, there are no published data on this specific population. Furthermore, we will evaluate the impact of an intervention in environmental education on these professionals who work in primary care and, in this way, can help in the incorporation of the theme food and nutrition, with emphasis on healthy eating and health promotion. Knowing that food and nutrition are essential when it comes to the concepts of health promotion and disease prevention, environmental education is a very important intervention tool. In the medium term, it is expected an improvement in the health conditions of the population served by the CHAs in their area of coverage. In addition, there is the possibility of reproducing the training protocol of the CHAs in other municipalities and states, besides the production of educational material.

Currently, there are no nutritionists inserted in the Family Health Strategy network of the municipality of Vitória/ES, which limits nutrition actions in this area. Therefore, inserting the theme of nutrition through this project with CHAs, in order to encourage them to adopt healthy habits, seems to be an interesting strategy in order to impact in the medium term on health conditions and nutrition of the population served by these professionals.

However, the main limitations involved are: the sample includes only voluntary CHAs from the region of Vitória/ES, making it impossible to extrapolate results to CHAs from other locations; in relation to the intervention, the greatest difficulties for the development of the research are related to a possible follow-up bias, considering that they should appear for the exams twice during the period of one year,



as well as for the educational activities. However, strategies for greater adherence to the study, such as frequent contact and the return of the exam results, were carried out. According to table 1 it is possible to observe that the adherence of the CHAs was superior to 70%.

## CONCLUSION

Identifying the needs of this population can promote preventive strategies aimed not only at guiding individual care, but also at supporting the development of more effective, evidence-based public policies. Therefore, the CACEA-ES Study can also subsidize the planning, implementation, monitoring and evaluation of more specific actions related to primary care.

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