



## FOOD AND NUTRITION EDUCATION FOR CONTROL OF COMORBIDITIES AMONG PEOPLE WITH INFECTIOUS DISEASES

*Educação alimentar e nutricional para o controle de comorbidades em pessoas com doenças infecciosas*

*Educación alimentaria y nutricional para el control de comorbidades en personas con enfermedades infecciosas*

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### ABSTRACT

**Objective:** To report the experience of implementing Food and Nutrition Education (FNE) Practices in group, for improvement of nutrition counseling acceptance among patients with infectious diseases. **Data synthesis:** This is an experience report of food and nutrition education activity carried out from April to November 2015 at the Evandro Chagas National Institute of Infectious Diseases (INI/Fiocruz). Twelve individuals carrying infectious and parasitic diseases, of both genders, diagnosed with overweight and metabolic syndrome, took part in seven monthly thematic workshops. Themes of relevance to the treatment of metabolic syndrome and overweight were approached by means of group chats and dynamics, and explanatory brochure distribution. During the workshops, eating behaviors were clearly identified, which were not in conformity with the nutrition counseling provided in previous individual appointments and hampered the control of the clinical conditions experienced in metabolic syndrome and overweight. In the workshops, the participants consolidated the knowledge of healthy eating habits and, by exchanging experiences, they felt more confident and motivated to overcome the difficulties during nutrition treatment. **Conclusion:** It was observed that the participants consolidated their knowledge and autonomy for healthy food choices and, with the exchange of experience, they felt more confident and motivated to overcome the difficulties during the nutrition treatment. Therefore, the implementation of FNE in group was effective in improving nutrition counseling acceptance, which brings forward new reports of healthy eating practices.

**Descriptors:** Food and Nutrition Education; Ambulatory Care; Feeding Behavior.

### RESUMO

**Objetivo:** Relatar a experiência da implantação de práticas de educação alimentar e nutricional (EAN) em grupo, para melhoria de adesão às orientações nutricionais, para pessoas com doenças infecciosas. **Síntese de dados:** Trata-se de um relato de experiência de atividade de educação alimentar e nutricional realizada no período de abril a novembro de 2015, no Instituto Nacional de Infectologia Evandro Chagas (INI/ Fiocruz), Rio de Janeiro. Doze indivíduos portadores de doenças infecciosas e parasitárias, de ambos os sexos, com diagnósticos



de excesso de peso e de síndrome metabólica participaram de sete oficinas temáticas mensais. Foram abordados temas relevantes para o tratamento da síndrome metabólica e do excesso de peso por meio de rodas de conversa, dinâmicas e distribuição de folhetos explicativos. Durante as oficinas, foram identificados de forma clara comportamentos alimentares que não correspondiam à orientação nutricional prévia fornecida na consulta individual e que dificultavam o controle das condições clínicas presentes na síndrome metabólica e excesso de peso. Nas oficinas, os participantes consolidaram o conhecimento sobre práticas alimentares saudáveis e, com a troca de experiência, sentiram-se mais seguros e motivados para superarem as dificuldades durante o tratamento nutricional. **Conclusão:** Observou-se que os participantes consolidaram seus conhecimentos e a autonomia para escolhas alimentares saudáveis e, com a troca de experiência, sentiram-se mais seguros e motivados para superarem as dificuldades durante o tratamento nutricional. Portanto, a implementação da EAN em grupo foi efetiva na melhora da adesão às orientações nutricionais, refletindo em novos relatos de práticas alimentares saudáveis.

**Descritores:** Educação Alimentar e Nutricional; Assistência Ambulatorial; Comportamento alimentar.

## RESUMEN

**Objetivo:** Describir la experiencia de la aplicación de prácticas de educación alimentaria y nutricional (EAN) en grupo para mejorar la adhesión de las orientaciones nutricionales en personas con enfermedades infecciosas. **Síntesis de los datos:** Se trata de un relato de experiencia de la actividad de educación alimentaria y nutricional realizada en el periodo entre abril y noviembre de 2015, en el Instituto Nacional de Enfermedades Infecciosas Evandro Chagas (INI / Fiocruz), Rio de Janeiro. Doce personas con enfermedades infecciosas y parasitarias de ambos sexos y diagnóstico de exceso de peso y del síndrome metabólico participaron en siete talleres temáticos mensuales. Fueron discutidos temas de interés para el tratamiento del síndrome metabólico y el sobrepeso a través de ruedas de conversación, dinámicas y distribución de folletos. Durante los talleres fueron claramente identificadas las conductas alimentarias que no correspondían con la orientación nutricional previa proporcionada en la consulta individual, lo que hace que sea difícil controlar las condiciones clínicas presentes en el síndrome metabólico y el sobrepeso. En los talleres, los participantes consolidaron el conocimiento sobre prácticas saludables de alimentación y con el intercambio de experiencias se sintieron más seguros y motivados para superar las dificultades en el tratamiento nutricional. **Conclusión:** Hemos observado con la aplicación del EAN en grupo, una mejora efectiva en la adhesión de las orientaciones nutricionales reflejadas en los nuevos informes de prácticas de alimentación saludables. También observamos que la frecuencia y la regularidad de la vigilancia nutricional tienen un papel crucial en el éxito del tratamiento nutricional.

**Descriptorios:** Educación Alimentaria y Nutrición; Atención Ambulatoria; Comportamiento Alimentación.

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## INTRODUCTION

Over time, morbidity and mortality due to infectious diseases have significantly varied worldwide in response to the development of measures for prevention and control. Concomitantly, the current epidemiological profile of these communicable diseases had its outline modified by the rapid urbanization and ease of communication between continents, countries and regions<sup>(1)</sup>.

However, they represent a continuous challenge for prevention and treatment programs, given that, from the chronification of these, new clinical situations such as metabolic comorbidities would become important in caring for infected individuals. Recent data shows a prevalence of metabolic syndrome ranging from 16.7% to 31.3% in HIV-infected patients<sup>(2)</sup>, and reaching 16.8% in patients with Chagas disease<sup>(3)</sup>, which is already very similar to the prevalence observed in the general population (between 17 and 46%)<sup>(2)</sup>. Thus, it is necessary to invest in strategies for prevention and control of the comorbidities that affect individuals with infectious and parasitic diseases.

Putting the target audience of this report into perspective, one can perceive, in recent years, a downward trend in the mortality rate of individuals with infectious and parasitic diseases, as a result of actions articulated by the Ministry of Health regarding the increase in the availability and use of effective tools for surveillance, prevention and control of these diseases. Nevertheless, the morbidity trend in this population, despite being also decreasing, does not show the same intensity as that observed in mortality<sup>(1)</sup>.

Taking Chagas disease as an example, after overcoming the acute phase, the individual may progress to one of the chronic forms, presenting cardiac alterations, such as heart failure and thromboembolic events, and/or digestive alterations (megaesophagus and megacolon)<sup>(1)</sup>. As for AIDS, the availability of novel antiretroviral drugs has increased the survival of people living with HIV, but it also has side effects that impact on the morbidity, such as overweight, dyslipidemia, and insulin resistance<sup>(1,4)</sup>. Thus, individuals with infectious and parasitic diseases can become chronic patients and present unfavorable metabolic conditions, increasing the morbidity of their underlying disease. Among the most frequent comorbidities we can highlight the metabolic syndrome and excess weight (overweight and obesity)<sup>(2,3)</sup>.

The metabolic syndrome associates cardiovascular risk factors, such as hypertension, hypercholesterolemia and diabetes, in addition to central fat deposition, being regarded a great challenge in clinical practice, as it leads to an increase in mortality due to cardiovascular causes<sup>(5)</sup>.

Overweight and obesity are defined as an excess of body fat accumulated in the adipose tissue, leading to health implications<sup>(6)</sup>. In Brazil, according to data from the 2008-2009 Household Budget Survey (*Pesquisa de Orçamentos Familiares - POF*), conducted by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística - IBGE*) in partnership with the Ministry of Health, there has been a steady increase in overweight in the population over 20 years since 1974. Obesity has increased more than fourfold among men, from 2.8% to 12.4%, and more than twofold among women, from 8% to 16.9%<sup>(7)</sup>.

Cardiovascular diseases are regarded the greatest cause of death associated with overweight, but it is also known that obese people often develop other conditions that predispose them to mortality, especially diabetes, hypertension, neoplasia, digestive tract diseases and hepatic steatosis<sup>(8)</sup>.

Before this scenario, food and nutrition education (FNE) becomes a fundamental practice with regard to health promotion in this public. In Brazil, important legal advances have been achieved in recent years, such as the Organic Law on Food and Nutrition Security (*Lei Orgânica de Segurança Alimentar e Nutricional - LOSAN*) and Decree no. 7,272/2010, which creates the National Food and Nutrition Security System, which together have put the FNE as one of the guidelines of the National Policy on Food and Nutrition Security (*Política Nacional de Segurança Alimentar e Nutricional - PNSAN*). FNE should “encourage the autonomy of the subject for healthy eating practices, valuing and respecting the cultural and regional specificities of different groups and ethnicities, with a view to Food and Nutrition Security and ensuring the Human Right to Adequate Food”<sup>(9)</sup>.

Adequate eating behavior and body weight control are essential to reduce the risk of health issues and improve the nutritional and metabolic profile. In the last decades, a change has occurred in the eating behavior of the Brazilian population, which has adopted nutrition with high caloric density, excess saturated fat, simple sugar and sodium, as well as insufficient intake of fiber, vitamins and minerals<sup>(10)</sup>.

For management of the food and nutrition problems currently experienced by the population, individual nutrition care in outpatient clinics plays a strategic role. However, there are multicausal factors that interfere with the effectiveness of the nutrition treatment performed in outpatient clinics, among which is the self-motivation for behavioral changes that favor healthy eating practices.

In this sense, the FNE process considers that, despite being modifiable factors, “voluntary food changes depend on a personal commitment and continuous effort in view of several situations, many times against the easy way, and even against personal and social demands”<sup>(9)</sup>. Other fundamental aspects are the individuals’ regularity and frequency of attendance to nutrition appointments. Adherence to nutrition treatment is directly related to the number of appointments attended<sup>(11)</sup>.

In view of these limitations, it is important to seek strategies to increase the individuals’ adherence to the guidelines on nutrition. Among such strategies, practices of education and motivation, in group and with interpersonal interactions, seem effective<sup>(12)</sup>.

In Brazil, some authors report their experience with group activities as useful tools for the development of healthy life habits, especially those related to eating, such as the FNE<sup>(13-20)</sup>. In this sense, the conduction of thematic workshops in group, with monthly meetings, was a FNE strategy aimed to increase the regularity and frequency of attendance to nutrition appointments (by reducing the time required for appointment scheduling) and, consequently, render the nutrition treatment more efficient.

Therefore, the main objective of this article is to report the experience of implementing Food and Nutrition Education (FNE) practices in a group, for improvement of adherence to nutrition counseling, for people with infectious diseases.

## DATA SYNTHESIS

This is the report of an experience conducted from April to November 2015, at the Evandro Chagas National Institute of Infectious Diseases (*Instituto Nacional de Infectologia Evandro Chagas - INI*), a unit of Fiocruz that provides clinical assistance and performs research on infectious diseases in Rio de Janeiro. At the institute, patients with HIV/AIDS, HTLV (human T-lymphotropic virus), Chagas disease, leishmaniasis, tuberculosis, acute febrile diseases, among others, are treated.

Patient identification occurred in the previous four months (December 2014 to March 2015). These patients were screened during the individual outpatient nutrition appointments, and their willingness and availability to participate in the group were verified. The therapeutic focus was the control of the morbidities associated to excess weight and metabolic syndrome.

Twenty-three adult and elderly patients of both sexes, carrying infectious and parasitic diseases, diagnosed with excess weight (overweight and obesity) and metabolic syndrome, were invited. Initially, seventeen accepted the invitation and declared they had time to participate in the FNE program. Of these, five did not attend the activities. These patients were contacted by phone and justified their inability to attend the FNE activities due to other commitments and duties, such as work and appointments scheduled on other dates, which greatly increase the frequency of hospital attendance and difficulties related to transportation.

Patients who did not join the group FNE activities continued with individual nutrition care, with appointments every three to four months. Thus, 12 patients attended the workshops.

For the diagnosis of overweight, the Body Mass Index (BMI) recorded in the appointments was considered, obtained from the proportion between weight and height<sup>(21)</sup>. The diagnosis of metabolic syndrome was defined according to the presence of abdominal adiposity as an essential condition (waist circumference  $\geq 94$ cm in men and  $\geq 80$ cm in women), and at least two criteria among the following: serum triglyceride  $\geq 150$ mg/dL or drug treatment for hypertriglyceridemia; HDL-cholesterol  $< 40$ mg/dL for men and  $< 50$ mg/dL for women; systemic arterial pressure  $\geq 130 \times 85$ mmHg or drug treatment for hypertension; fasting glycemia  $\geq 100$ mg/dL or drug treatment for diabetes<sup>(22)</sup>.

In order to confirm schedules, all patients were contacted by telephone and, again, informed of the commencement of group activities, once the initial recruitment took place four months prior to that, on average.

The Nutrition Service outpatient clinic, routinely used for individual appointments, was the place made available to house the FNE group activities. Adult and elderly patients (over 18 years old) are provided cared at the outpatient clinic, referred by doctors and other health professionals. The routine of outpatient nutrition care includes clinical and food anamnesis and anthropometric measurements, laboratory tests, nutrition treatment planning and nutrition counseling to the patient.

As a matter of physical space limitation and trying to get around the stigmatization of people living with HIV/AIDS<sup>(23,24)</sup>, two groups were scheduled on different dates. In order to make the space more welcoming and facilitate interaction between patients and nutritionists, the chairs were previously arranged in a semicircle. A computer was used for a slide show with illustrations and explanations on the theme of each workshop. The monthly periodicity was chosen in an attempt to make the participants' adherence feasible, as they lived in neighborhoods far from the institution. While capturing the sample, the patients were asked about this periodicity and considered it feasible to attend once a month.

The expected duration of the thematic workshops was from 90 to 120 minutes (starting at 1:00 p.m.), in an attempt not to become tiresome or monotonous, and also to meet the patients' request to expedite their return home.

Seven thematic workshops were planned, each of them addressing a relevant theme to the control of overweight and metabolic syndrome. In an attempt to render the workshops more dynamic, interactive activities and conversation wheels were carried out, and explanatory brochures synthesizing the most important points of the thematic workshop were distributed.

Because of the availability of computers in the attendance room and limited financial resources to purchase educational materials, the workshop theme was presented by means of a slide show, always using many figures and minimal text.

All the material used in the workshops was produced based on publications by the Ministry of Health, such as the Food guide for the Brazilian population<sup>(25)</sup> and Brazilian Regional Food<sup>(26)</sup>. The Nutrition Service staff had the material reviewed and approved.

It is important to clarify that the proposal to work with FNE in a group was a goal outlined by the Nutrition Service in response to the increased demand for scheduling outpatient appointments, resulting from the increase in the prevalence of metabolic complications. It was observed that, as of 2010, the demand for scheduling first-time nutrition appointment had been growing according to the greater case complexity of the hospitalized patients, who demand specific nutrition care after being discharged, and also as a consequence of the increase in the prevalence of metabolic complications, reflecting the chronicity of infectious diseases<sup>(1)</sup>.

In result, the waiting time for scheduling an appointment had exceeded 100 days by the end of the first half of 2011. By adding one more shift, the waiting time was reduced by 50% by the end of the following year. However, as of 2013, there was a further worsening of waiting time and, at the same time, an absenteeism rate of 42% was detected. In an analysis performed in conjunction with the INI Nursing Service on the causes of absenteeism to the individual appointments, the patients reported: 1) delay in scheduling, 2) forgetting to schedule the appointment, and 3) lack of money to pay for transportation ticket.

At the end of 2014, a high absenteeism rate was observed (mean value of 46% for first appointments and 40% for return visits), and a mean of 103-day waiting period for scheduling first appointments. Given this situation, it was questioned whether a long wait for getting the nutrition appointment scheduled could negatively affect the adherence to nutrition treatment.

From that reflection emerged the proposal to work the FNE in group, aggregating participants with common metabolic comorbidities (metabolic syndrome and excess weight) in monthly meetings. The creation of the group had as main objective the improvement of patients' adherence to nutrition counseling, as well as a reduction in the absenteeism rate and in the time for scheduling outpatient appointments.

The workshops were conducted by three nutritionists, responsible for the selection and inclusion of patients. Body weight and waist circumference were checked at each meeting. Laboratory tests (glycemia and lipidogram) were monitored during the period. During the workshops the participants were encouraged to ask questions, clear doubts up, and share experiences. In the end, they received the explanatory brochure on that topic. They were also asked to bring in recipes for home-made preparations that they considered healthy, thus valuing the cultural specificities of each participant.

### **Workshop 1:**

The nutritionists, the participants and the objectives of the FNE activities in a group were presented. The definition of metabolic syndrome, unknown by the patients, was explained. The defining clinical conditions and the dysfunctions related to

excess weight were described. The nutritionists presented the advantages of group activities, favoring motivation and rendering the treatment more dynamic. In an attempt to stimulate motivation, an objective goal was proposed for the participants to alter their nutritional parameters - a 10% body weight loss and 5% reduction in waist circumference.

In one dynamic experience, the patients were asked about the major limiting factors for adherence to the guidelines on nutrition. Some of the cited limitations (lack of family collaboration, festive events, lack of financial resources for purchase of healthy and minimally processed foods) were discussed and, at that moment, nutritionists took the opportunity to explain the role of behavior in the genesis of obesity<sup>(11)</sup>. This initial workshop also served as a basis for further discussion addressing the following themes.

#### **Workshop 2:**

This workshop addressed the theme of healthy eating, and its proposal was to apply the test “How is your food?”, based on the document by the Ministry of Health<sup>(27)</sup>. This strategy served as the basis for approaching food groups, reviewing replacements, and presenting and discussing the composition of a healthy meal. Participants were encouraged to report positive and negative aspects of their eating routine during the dynamic experience.

It was observed that many patients presented an eating routine determined by the family members’ study and work schedules, and often based on ultra-processed foods (mainly processed meats). Probably, the individualized appointments are not efficient in raising all this information, and the care service provided in group allowed the participants to express and further detail their eating habit. Healthier alternatives to ultra-processed foods were suggested, based on the Food Guide<sup>(25)</sup>.

#### **Workshop 3:**

In an attempt to address two criteria that define the metabolic syndrome (hypertriglyceridemia and low serum HDL-cholesterol)<sup>(5,22)</sup>, the workshop was aimed at discussing those conditions and the types of fats in the diet. To this end, the origin and types of serum lipids were explained, as well as the causes and consequences of dyslipidemia, and the types of dietary fats. A dynamic experience was developed for the patients to opt for the best source of fats, among margarine, butter and vegetable oils; and among different types of meats. The comparisons were discussed by nutritionists to clarify the role of saturated fats in dyslipidemia and, therefore, in the metabolic syndrome<sup>(25)</sup>. Hints were given on how to reduce the amount of fat in the diet and how to replace saturated and trans fats for unsaturated fats (for instance: by limiting stir-fry dishes and fried foods, excluding ultra-processed foods, and replacing ready-made sauces with homemade olive oil-based sauces).

#### **Workshop 4:**

The theme of the workshop was sugar and sweeteners. The importance of this theme is due to the role of sugar in increasing weight and serum triglyceride<sup>(5,8,22)</sup>. The different types of sugar and the foods in which they occur were presented. The action of insulin in the body was also explained, because of the participants’ misperception of insulin as a medicine and not a hormone produced by the body. In a dynamic experience, by using packages and illustrations, the sugar content in some foods was shown. Attempts to reduce sugar in the diet were noticed, such as the replacement of desserts, soft drinks and juices with light and diet products, daily consumed. Therefore, another objective of the meeting was to approach the conscious use of sweeteners, types and intake limits, also using packages and illustrations in an effort to warn against the excessive consumption.

#### **Workshop 5:**

As the excessive sodium intake is one of the causes of increased blood pressure, contributing to the development of the metabolic syndrome<sup>(5,22)</sup>, a workshop was specifically elaborated to address this theme, showing the salt content in food and the harmful effects of excessive salt intake. Illustrations and packages of processed foods were presented for verification of the sodium content in the nutrition facts label. The participants were instructed and encouraged to make use of herbal salt (mixture of salt and herbs).

#### **Workshop 6:**

The purpose of this workshop was to present the dietary fiber. The theme was chosen owing to the consolidated knowledge on the association between its intake within a healthy diet and the control of glucose levels and serum lipids<sup>(5,8,22)</sup>. A dynamic experience was performed, in which the participants were asked to name a food they believed to be a source of dietary fiber, and how important fiber is to the body. Afterwards, their dietary sources and functions were presented and discussed, as well as their association with the control of the clinical conditions experienced in the metabolic syndrome and overweight.

#### **Workshop 7:**

After a final evaluation of the body weight and waist circumference, a brief summary of the themes presented was made and, in a dynamic experience, the patients were asked about what they were able to modify in their eating routine and whether any piece of new information acquired in the group had been incorporated into their habit.

As a final activity, a closing meeting was held, with the two groups brought together, and delivery of individual reports (with graphs on the evolution of body weight, waist circumference, glycemia and lipidogram), and participation certificates as well. The recipes brought by the patients were compiled into a brochure, having their characteristics emphasized: low in fat, low in sodium, high in fiber and/or sugar-free desserts. Some of the recipes were prepared and made available for tasting, and the brochure was distributed to the patients. To conclude, there was a conversation circle addressing the patients' perception of the group treatment.

Group activities are used as useful FNE tools and show good response in the development of healthy life habits, especially those related to eating. However, there are few reports of these positive experiences in the literature<sup>(13-20)</sup>. According to the report of the Food and Nutrition Education Meeting - Discussing Guidelines<sup>(9)</sup>, one of the major shortcomings of FNE programs is the lack of dissemination of successful results. Therefore, the present study was intended to report this implementation experience, in the attempt to improve the scarce literature, encouraging other groups of professionals to adopt a joint strategy for the development of healthy eating habits.

It was observed that the patients who agreed to participate and concluded the activities were retired or not working. What could initially have represented a hindrance, as it limited their economic situation, indeed favored the adherence to the group. An unexpected fact was that the workshop attendance was lower among participants with HIV/AIDS. It is believed that one of the reasons is the stigmatization of the disease<sup>(23,24)</sup> and that these individuals felt insecure about the confidentiality of their diagnosis being breached at some point in the discussion of health conditions during the activities, even though they had been warned that the group would be composed only of people living with HIV/AIDS.

In the first workshops, the participants were afraid and ashamed to express themselves, but as they got to know each other, they felt comfortable asking questions and telling their experiences, sometimes even losing focus of the theme addressed in the meetings, which was solved with the intervention of one of the nutritionists. As all participants had already had at least one outpatient nutrition appointment, the fact that the meeting was conducted by the nutritionists who were already providing care facilitated the interaction.

During the activities, there was the identification of behaviors that were not in conformity with the nutrition counseling previously provided (during the individual appointment) and hampered the control of the clinical conditions experienced in metabolic syndrome and overweight. Long periods of fasting, snacking habit, high frequency of meals away from home, replacing meal (mainly dinner) with high-calorie snack, excessive consumption of processed foods and sugar-sweetened coffee were among those behaviors. Among the hindering factors cited with regard to the adherence to the guidelines on nutrition, the following stand out: dietary habits and family routine, working hours and lack of commitment. Such limitations to healthy eating habits are also described in other similar studies<sup>(13-20)</sup>.

It was observed the report of habits that had never been mentioned in the individual appointments, such as frequent consumption of alcoholic beverage and binge eating. On the other hand, it was also interesting to observe a very limited perception of what would a healthy diet be, in addition to demands related to unnecessary and demotivating food restrictions, since these were not followed, though the participants believed they would be defended by the nutritionists.

Behavioral changes during meals were also addressed in group dynamics, including proper chewing and swallowing. However, it was observed that not always the meals setting was a calm environment, favorable to adequate chewing, and the concomitant intake of large volumes of liquid during meals was a frequent occurrence.

Throughout the workshops, the moment of weighing and measurement of waist circumference caused much expectation to some participants. It was then emphasized that the nature of the goal was purely about motivation and, if not accomplished, it would not affect the participation in the activities.

In the dynamic experience for final evaluation, the participants expressed their opinion about the FNE practices in group. They were satisfied with the proposal, the themes covered and the periodicity. Participants who did not reach the goal justified failure with their own lack of commitment and asked to participate again in the group. In this way, it was established that those whose attendance reached 75% and/or met the proposed goal, would move to a maintenance group, with meetings every 4 months. The others could participate again in the group in 2016.

Some limiting factors could be identified during the implementation of this FNE proposal, such as the lack of financial resources for purchase of educational materials. The physical space was adapted for the workshops, but was not suitable for more interactive activities. The patients considered appropriate the periodicity and duration of the workshops, but, as for the shift when the activities were performed (in the afternoon), they reported having a preference for going to the hospital during the morning shift.

Based on these limiting factors, some modifications were established for the 2016 group, such as more dynamic activities and focus on attendance to the meeting and changes in eating behavior, leaving changes in nutritional parameters as secondary goals. However, the research setting was not changed because of a lack of adequate physical space, and the shift was not changed to the morning because of room unavailability.

On the other hand, the experience has shown several positive aspects. The moment of assistance to the group was reported as a space where the participants could freely express their opinion and confront their ideas, which normally does not happen

in the individual appointments. From this, the team learned about the importance of the professional-patient bond, and that accessible communication ensures an effective dialogue, avoiding distortions in the understanding of dietary guidelines.

Furthermore, it stands out the ease of acceptance of the proposal by the institution, which has ensured the maintenance of the activity as part of the nutrition care. The implemented proposal resulted in the development of a research project, which will include students of the graduate specialization program on Clinical Nutrition applied to Infectious Diseases.

By the end of the first quarter of 2016, the waiting time for appointment scheduling had decreased by 60%, which is believed to be, at least in part, due to the implementation of FNE group activities focused on the treatment of excess weight and metabolic syndrome.

From this experience, it is believed that FNE in group represents an efficient healthcare strategy that can be implemented to optimize nutrition care in the metabolic comorbidities of patients with infectious and parasitic diseases. However, further research is needed to evaluate the effectiveness of these FNE practices in improving patients' anthropometric and clinical parameters.

## CONCLUSION

It was observed that the participants consolidated their knowledge and autonomy for healthy food choices and, with the exchange of experiences, they felt more confident and motivated to overcome the difficulties during nutrition treatment. Therefore, the implementation of FNE in group was effective in improving adherence to nutrition counseling, which brings forward new reports of healthy eating practices.

## CONFLICTS OF INTEREST

The authors of this paper have no conflicts of interest to declare.

## REFERENCES

1. Ministério da Saúde (BR). Doenças infecciosas e parasitárias: guia de bolso. 8ª ed. rev. Brasília: Ministério da Saúde; 2010.
2. Nguyen KA, Peer N, Mills EJ, Kengne AP. A meta-analysis of the metabolic syndrome prevalence in the global HIV-infected population. PLoS ONE. 2016;11(3):e0150970.
3. Jackson Y, Castillo S, Hammond P, Besson M, Brawand-Bron A, Urzola D, et al. Metabolic, mental health, behavioural and socioeconomic characteristics of migrants with Chagas disease in a non-endemic country. Trop Med Int Health. 2012;17(5):595-603.
4. Ministério da Saúde (BR). Protocolo clínico e diretrizes terapêuticas para manejo da infecção pelo HIV em adultos. Brasília: Ministério da Saúde; 2013.
5. Sociedade Brasileira de Hipertensão, Sociedade Brasileira de Cardiologia, Sociedade Brasileira de Endocrinologia e Metabologia, Sociedade Brasileira de Diabetes, Associação Brasileira para Estudos da Obesidade. I Diretriz Brasileira de Diagnóstico e Tratamento da Síndrome Metabólica. Arq Bras Cardiol. 2005;84(1):3-28.
6. World Health Organization - WHO. Reducing risks, promoting healthy life. Geneva: WHO; 2002.
7. Instituto Brasileiro de Geografia e Estatística – IBGE, Ministério do Planejamento, Orçamento e Gestão. Pesquisa de Orçamentos Familiares 2008-2009 [Internet]. Rio de Janeiro: IBGE; 2010 [acesso em 2016 Jun 10]. Disponível em: <http://www.ibge.gov.br>
8. Jung RT. Obesity as a disease. Brit Med Bull. 1997;53(2):307-21.
9. Ministério da Saúde (BR), Coordenação-Geral de Educação Alimentar e Nutricional. Relatório final do Encontro de Educação Alimentar e Nutricional: discutindo diretrizes. Brasília: Ministério da Saúde; 2011.
10. Levy RB, Claro RM, Mondini L, Sichieri R, Monteiro CA. Distribuição regional e socioeconômica da disponibilidade domiciliar de alimentos no Brasil em 2008-2009. Rev Saúde Pública. 2012;46 (1):6-15.
11. Janda M, Zeidler D, Bohm G, Schoberberger R. An instrument to measure adherence to weight loss programs: the Compliance Praxis Survey-Diet (COMPASS-Diet). Nutrients. 2013;5(10):3828-38.
12. Chimenti BM, Bruno MLM, Nakasato M, Isosaki M. Estudo sobre adesão: fatores intervenientes na dieta hipocalórica de coronariopatas internados em um hospital público de São Paulo. Rev Bras Nutr Clin. 2006;21(3):204-10.

13. Meirelles ARN, Luedy A, Menezes D, Ribeiro H. Implantação de um programa de educação do paciente em um hospital público. *Rev Baiana Saúde Pública*. 2015;39(3):668-80.
14. Pereira MA, Pereira AA, Leão JM, Lisboa LCV, Elias MAR, Ghetti FF, et al. Desafios e reflexões na implantação de um programa de educação alimentar e nutricional (EAN) em indivíduos com excesso de peso. *Rev Bras Promoç Saúde*. 2015;28(2):290-6.
15. Franzoni B, Lima LA, Castoldi L, Labrêa MGA. Avaliação da efetividade na mudança de hábitos com intervenção nutricional em grupo. *Ciênc Saúde Coletiva*. 2013;18(12):3751-8.
16. Moreira P, Romualdo MCS, Amparo FC, Paiva C, Alves R, Magnoni D, et al. A educação nutricional em grupo e sua efetividade no tratamento de pacientes obesos. *RBONE*. 2012;6(35):216-24.
17. Ferreira FB, Fraga JCS, Nunes JP, Liberali R, Navarro F. Alterações antropométricas de pacientes obesos submetidos a um tratamento multidisciplinar da obesidade em Porto Alegre. *RBONE*. 2009;3(16):290-7.
18. Dias LCGD, Fioravante M, Zacarin JF, Lopes TVC. Reeducação alimentar no programa de saúde da família: relato de experiência. *Rev Ciênc Ext*. 2008;4(1):122-8.
19. Maffaccioli R, Lopes MJM. Educação em Saúde: a orientação alimentar através de atividades de grupo. *Acta Paul Enferm*. 2005;18(4):439-45.
20. Diogo MJDE, Ceolim MF, Cintra FA. Implantação do grupo de atenção à saúde do idoso (GRASI) no Hospital de Clínicas da Universidade Estadual de Campinas (SP): relato de experiência. *Rev Latinoam Enferm*. 2000;8(5):85-90.
21. World Health Organization - WHO. Obesity: preventing and managing the global epidemic. Report of a WHO Consultation. Geneva: WHO; 2000. (Technical Report Series 894).
22. Sociedade Brasileira de Cardiologia. V Diretriz Brasileira sobre Dislipidemia e Diretrizes de Prevenção da Aterosclerose do Departamento de Aterosclerose da SBC. *Arq Bras Cardiol*. 2013;101(4 Supl 1):1-22.
23. Garcia S, Koyama MAH. Estigma, discriminação e HIV/Aids no contexto brasileiro, 1998 e 2005. *Rev Saúde Pública*. 2008;42(Supl 1):72-83.
24. Parker R, Agleton P. Estigma, discriminação e AIDS. Rio de Janeiro: Associação Brasileira Interdisciplinar de AIDS; 2001. (Coleção ABIA, Cidadania e Direitos, 1).
25. Ministério da Saúde (BR), Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Guia alimentar para a população brasileira. 2ª ed. Brasília: Ministério da Saúde; 2014.
26. Ministério da Saúde (BR), Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Alimentos regionais brasileiros. 2ª ed. Brasília: Ministério da Saúde; 2015.
27. Ministério da Saúde (BR), Secretaria de Atenção à Saúde, Coordenação Geral da Política de Alimentação e Nutrição. Guia alimentar: como ter uma alimentação saudável. Brasília: Ministério da Saúde; [s.d.]. (Guia de bolso).

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