

PARENTS' PERCEPTION OF THE IMPLEMENTATION OF A STRATEGY FOR THE FORTIFICATION OF CHILD FOOD WITH MICRONUTRIENTS

Percepção dos pais sobre a implantação da estratégia de fortificação da alimentação infantil com micronutrientes

Percepción de los padres sobre la implantación de la estrategia de fortificación de la alimentación infantil con micronutrientes

Original Article

ABSTRACT

Objective: To assess parents' perception of the implementation of the strategy for the fortification of child food with micronutrient powders (NutriSUS). **Methods:** Qualitative descriptive and exploratory study conducted from August to September 2015 with 11 mothers of children enrolled in preschool programs in Montes Claros, Minas Gerais, Brazil. Data were collected using a semi-structured questionnaire and then underwent content analysis from which two thematic categories emerged: "Importance of NutriSUS" and "Schools as health-promoting environments". **Results:** Parents showed to be aware of the importance/benefits of NutriSUS given the increase in child's appetite and provision of a nutritionally enriched diet. They also had a positive perception of the strategy of partnership between the school and the health center and of the school as a health-promoting environment. **Conclusion:** Parents' reports indicated that they understood the objective of the fortification strategy and the importance of a healthy diet in the first years of life. This knowledge contributes to improve the support for the growth and development of Brazilian children given that parents are important agents for the effectiveness of the strategy.

Descriptors: Child Nutrition; Micronutrients; Public Health.

RESUMO

Objetivo: Analisar a percepção dos pais dos educandos acerca da implantação da estratégia de fortificação da alimentação infantil com micronutrientes em pó (NutriSUS). **Métodos:** Pesquisa qualitativa, descritiva e exploratória, realizada nos meses de agosto e setembro de 2015, com 11 mães de alunos matriculados nos Centros de Educação Infantil da cidade de Montes Claros, MG, Brasil. Os dados foram coletados por meio de uma entrevista semiestruturada, sendo analisados pela técnica de análise de conteúdo, sendo identificadas duas categorias temáticas "Importância do NutriSUS" e as "Escolas como ambiente promotor de saúde". **Resultados:** Os pais demonstraram algum conhecimento sobre a importância/benefício do NutriSUS, reconhecido pelo aumento do apetite dos seus filhos e o entendimento da oferta de uma alimentação mais enriquecida nutricionalmente. Eles ainda apresentaram uma percepção positiva da estratégia de parceria entre escola e unidade de saúde e a escola como ambiente promotor de saúde. **Conclusão:** O relato dos pais indicou que eles compreendem o objetivo da estratégia de fortificação e a importância de uma alimentação saudável nos primeiros anos de vida. Esse conhecimento contribui para melhorar o suporte ao crescimento e desenvolvimento das crianças brasileiras uma vez que os pais são agentes condicionantes para a efetividade dessa estratégia.

Descritores: Alimentação Infantil; Micronutrientes; Saúde Pública.

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RESUMEN

Objetivo: Analizar la percepción de los padres de los alumnos sobre la implantación de la estrategia de fortificación de la alimentación infantil con micronutrientes en polvo (NutriSUS). **Métodos:** Investigación cualitativa, descriptiva y exploratoria realizada en los meses de agosto y septiembre de 2015 con 11 madres de alumnos matriculados en el Centro de Educación Infantil de la ciudad de Montes Claros, MG, Brasil. Los datos fueron recogidos a través de una entrevista semiestructurada y analizados a través de la técnica de análisis de contenido con la identificación de dos categorías temáticas “La Importancia del NutriSUS” y “Las escuelas como ambiente de promoción de la salud”. **Resultados:** Los padres demuestran algún conocimiento sobre la importancia/el beneficio del NutriSUS reconocido por el aumento del apetito de sus hijos y el entendimiento de la oferta de una alimentación más rica de nutrientes. Ellos presentaron una percepción positiva de la estrategia de acuerdo entre la escuela y la unidad de salud y la escuela como ambiente de promoción de la salud. **Conclusión:** El relato de los padres indicó su comprensión del objetivo de la estrategia de fortificación y la importancia de una alimentación saludable en los primeros años de vida. Ese conocimiento contribuye para mejorar el apoyo al crecimiento y desarrollo de niños brasileños ya que los padres son factores condicionantes para la efectividad de esa estrategia.

Descriptor: Nutrición del Niño; Micronutrientes; Salud Pública.

INTRODUCTION

Adequate nutrition in the first years of the child's life is essential to the healthy development of the child⁽¹⁾. When it is inadequate, it can lead to disorders such as nutrient deficiency, early development of overweight and obesity, and associated chronic diseases⁽²⁾. On the other hand, children with optimal eating habits reach their normal development and become healthier adults with greater intellectual and productive capacity⁽¹⁾.

Epidemiological data show the severity of malnutrition in Brazil. In a study of 1,214 children under five years old in Maranhão, malnutrition was reported in 4.5% of them based on weight-for-age, 3.9% based on weight-for-height, and 8.5% considering short stature for age⁽³⁾. In Acre, of 667 children analyzed, 9.9% had a deficit in height-for-age and 4.1% had a deficit in weight-for-height⁽⁴⁾. In the municipality of Serro, Minas Gerais, 10.66% of 722 children aged 2 to 5 years assessed were malnourished⁽⁵⁾.

Due to rapid growth and physiological and immunological immaturity, children represent a group of great vulnerability to adequate intake of micronutrients⁽¹⁾. This is an issue that deserves attention since the lack of

micronutrients increases children's susceptibility to diarrhea and infections and may compromise the maturation of the nervous, visual, mental, and intellectual systems⁽⁶⁾.

Childhood micronutrient deficiencies are considered a real public health problem worldwide, especially in developing countries, where high rates are observed⁽⁷⁾. In Brazil, the most frequently observed micronutrient deficiencies are iron deficiency and vitamin A deficiency⁽⁸⁾. In 2006, according to data from the National Demographic and Health Survey (*Pesquisa Nacional de Demografia e Saúde – PNDS*), 20.9% of Brazilian children under the age of five had anemia⁽⁹⁾, which is associated with a lack of iron.

Iron deficiency anemia, which is due to iron deficiency in the body, is the most common disease caused by nutritional deficiency and affects more than half of the world population⁽¹⁰⁾, especially infants and preschool children. In Brazil, studies carried out in different epidemiological scenarios have shown that 52% of the children attending daycare centers had this pathology⁽¹¹⁾. A study in Belo Horizonte, Minas Gerais, Brazil, showed a prevalence of anemia in 37.3% of children⁽¹¹⁾, and another study in Vitória, Espírito Santo, Brazil, found a prevalence of 37%⁽¹²⁾.

The most common causes of anemia include low intake and/or low absorption of dietary iron⁽¹³⁾. In children, anemia is commonly associated with early interruption of exclusive breastfeeding and intake of substances such as antacids, phytates, phosphates, oxalates, and tannins, which decrease iron absorption⁽¹⁴⁾. The adverse effects of anemia are severe and affect cognitive ability, behavior, growth and cellular immunity⁽¹¹⁾.

In order to prevent diseases caused by nutritional deficiencies, the Ministry of Health, in partnership with the Ministry of Social Development and Fight against Hunger and the Ministry of Education, launched in the second half of 2014 the NutriSUS – a strategy for the fortification of child foods with micronutrient powders⁽¹⁵⁾. Such strategy is targeted at children from six months to 48 months of age enrolled in day care centers of the Health at School Program. The strategy consists of the distribution of 1g-sachets containing a powder mixture of 15 micronutrients to be added to one of the child's meals at the time of eating⁽¹⁵⁾.

The recommendations for using the sachets in schools or daycare centers should follow the norms of the Resolution of the Collegiate Board of Directors (*Resolução da Diretoria Colegiada – RDC*) No. 316/2014 of the Brazilian Health Surveillance Agency (*Agência Nacional de Vigilância Sanitária – ANVISA*) – although it is a powdered food, it must follow standards of hygiene from preparation to consumption⁽¹⁶⁾. The content of the sachet should be added to one of the meals, mixed into a small portion of the food that may have a pasty consistency – it

can even be added to rice and beans. Heating the powder or adding it to liquids or hard foods should be avoided so there is no loss of nutrients. The mixture should be added to individual and collective meals, and children following NutriSUS supplementation do not need another iron supplementation⁽¹⁵⁾. It has been shown that in a one-year period the micronutrient fortification strategy reduces iron deficiency by 51% and the prevalence of anemia by 31%⁽¹⁷⁾.

The success of programs such as NutriSUS depends to a large extent on parents because the dietary supplementation must be inserted into the daily lives of children. Eating habits are formed in childhood⁽¹⁸⁾ and parents play a key role in this process as they facilitate a family food environment at an early stage of the child's nutrition context. Parents' attitudes, beliefs and feeding practices adjust to food offerings, influence the time, quantity, and social context of meals, and set up the emotional environment that involve them^(18,19).

Considering that parents act as agents that put strategies like this in effect, the following question is raised: What do parents understand about the implementation of the strategy for the fortification of child food with micronutrient powders (NutriSUS)?

The present study aimed to assess parents' perception of the implementation of the strategy for the fortification of child food with micronutrient powders (NutriSUS).

METHODS

This is a qualitative descriptive and exploratory study carried out in August and September 2015 at a Municipal Early Childhood Education Center (*Centro Municipal de Educação Infantil – CEMEI*) located in a peripheral region of the city of Montes Claros, Minas Gerais, Brazil, covered by the NutriSUS strategy.

Participants were mothers of CEMEI students receiving supplementation at the time of the study. The sample was considered satisfactory although the data provided by the interviewees became repetitive and failed to add new information⁽²⁰⁾.

The study inclusion criteria were: mothers' participation in the NutriSUS awareness meeting at CEMEI, provision of written consent allowing their children to participate in the NutriSUS strategy, child's adherence to supplementation from the beginning of supplement administration, and time availability to answer the questions. Participants who did not follow the NutriSUS program at CEMEI from the time of its implementation until the time of data collection and mothers of children who were not regularly receiving supplementation were excluded. Thus, 11 mothers of children enrolled in CEMEI participated in the study.

The data collection instrument was a semi-structured questionnaire. The interviews were carried out individually and included two blocks of questions. The first provided the characterization of the population thorough the variables: age, marital status, education. The second block included the guiding question of the study: "What benefits did NutriSUS bring to your child/community?". Data collection took place after classes, when parents picked their children up at CEMEI.

The interviews lasted about 20 minutes and were then recorded and transcribed verbatim in order to ensure data reliability. Data were analyzed using the content analysis technique⁽²¹⁾ in the thematic modality and without prior definition of categories. First, the interviews were read and the coding and context units were determined. Then, the categories of analysis were determined and the coding and context units were grouped with similar attributes or attributes that related to each other. The following categories were identified: "Importance of NutriSUS" and "Schools as health-promoting environments". Finally, data were interpreted seeking to find the underlying content of what was manifested. In the analysis of the results, the statements were organized using codes – M for mother, M1 to M11 – to guarantee anonymity.

The study was approved by the Research Ethics Committee of the State University of Montes Claros (*Universidade Estadual de Montes Claros – UNIMONTES*) under Opinion No. 911,383, of 11 December 2014. The study complied with the guiding principles of research involving human beings established by Resolution No. 466/12 of the National Health Council.

RESULTS AND DISCUSSION

The identification data of the mothers interviewed are presented below. After defining the two thematic categories, the results were analyzed within each one as follows.

Identification data of the interviewed mothers

The 11 mothers interviewed were between 18 and 46 years old and showed to be involved in the care of their children. The majority lived in a common-law marriage, two were separated from their partners and all had low socioeconomic status, which reinforces the importance of government assistance in promoting healthy eating through the fortification of foods with micronutrients. Regarding education, nine mothers had completed secondary education and only two had incomplete secondary education.

Importance of NutriSUS

This category is about parents' perception of the importance and benefits of NutriSUS. Their statements

indicate they understand that the supplementation promotes nutritional enrichment of food and that the vitamins contained in it bring benefits to the growth and strength of the child, who develops greater resistance to diseases. There were also reports on children's positive responses to the fortification, especially in relation to child's increased appetite and boosted mood. These thoughts are exemplified in the following statements:

"[...] he is following a healthy diet and the supplement would help avoid anemia and other diseases, right? And it helps him, because my son did not breastfeed" (P11).

"[...] getting these vitamins will improve his nutrition and may contribute to his growth" (P1).

"[...] I think that the main benefit is the increase in appetite, which combats malnutrition or any vitamin or mineral deficiencies" (P2).

The main goal of the strategy for the fortification of foods with microminerals is to strengthen child development and the prevent vitamin and mineral deficiencies, especially anemia and iron deficiency⁽²²⁾. The benefits of early childhood supplementation are mainly related to the critical stage of development in this phase. Studies have associated the use of such strategy with a reduction of 50% in the risk of anemia and 79% in the risk of iron deficiency in addition to improvements in anthropometric indices and cognitive performance of children⁽²²⁾. However, even though NutriSUS is well structured, the support and collaboration of the family is indispensable for successful results – hence the need to assess parents' perceptions regarding the theme.

Studies on infant nutrition emphasize the importance of knowing parents' perceptions^(23,24) as cultural aspects impregnated in the family are among the multiple factors associated with the child's health status⁽²⁵⁾. Thus, food attitudes and practices of parents shape the children's food supply as well as the quantity and quality of meals. Studies in developed countries have shown examples of this association; for instance, children whose parents are overweight or obese are more likely to develop the same problems⁽²⁶⁾.

Informing parents and integrating them into programs such as the NutriSUS strategy also play a role in drawing their attention to the possibility of their children having nutritional deficiencies and developing related diseases such as anemia. Parents' perception of the nutritional status of the child is an aspect that has been investigated because an altered perception or the parents' non-recognition of the dystrophic nutritional status of their children can compromise the adoption of preventive or treatment measures in this situation⁽¹⁸⁾.

Schools as health-promoting environments

This category presents parents' perceptions of the school as a partner of the health care center and, therefore, an environment that promotes child's health. The joint work between the public sectors of health and education is recommended by the World Health Organization for the adoption of integrative measures to reduce anemia in the country⁽¹⁵⁾. It is the case of contiguous actions carried out by the school and the health care center to put food fortification strategies in effect.

In the present study, it was observed that the partnership between the school and the health care center for the promotion of the NutriSUS strategy was well assimilated by the mothers interviewed. They emphasized that through this partnership their children had access to healthier food and, consequently, improved their health, as highlighted in the following statements:

"[...] because of this initiative between the school and the center, the children began to eat better in order to grow healthfully and without diseases" (P4).

"[...] Yes, because in the health care center they do not keep much contact like they do it here at the school, because we only seek the health care center when we need something and when the child gets sick. And at school they are already being followed up. And my son spends a lot of time here at school and he eats at school, so it helps a lot" (P11).

Mothers even stressed that children who receive the supplement in schools are less vulnerable to diseases, which avoids the need to take them to the health care center. The decrease in the demand for health centers can smoothen the flow of patients in health care centers and improve the service provided. These thoughts are described as follows:

"[...] it is a partnership between the school, the center and the family, involving everyone. We bring the children to school because we trust the school, and getting these vitamins here only tends to improve the health of the children so you do not have to take the children to the health center all the time" (P6).

"[...] it makes it easier for people who work and cannot stay with the children all day, they come to school, they learn and they even take care of their health." (P8).

The ESF suggests that this school/health care center exchange goes beyond the biological body and reaches humans in their complexity and completeness⁽²⁷⁾. Therefore, they need to introduce actions that extrapolate the walls of health care centers and reach the historical, social, cultural,

political and economic context of individuals or groups in order to promote people's health. The complexity of this strategy shows the inability of the health sector to operate in isolation, and it is imperative to establish partnerships between different social segments, including the education sector, which is represented by schools⁽²⁸⁾.

Health promotion and prevention actions are preferably carried out intersectorally. In this context, the school stands out as an important environment for the development of preventive actions with a focus on health education⁽²⁹⁾. It is believed that these environments are conducive to the execution of collective actions and constitute an opportunity to reinforce actions that contribute to the full development of children. In addition, the fact that many children enrolled in public early childhood education centers in Brazil eat their main meals at school should be highlighted as an important opportunity to develop the action and extend the coverage of the strategy to prevent anemia and other nutritional deficiencies⁽¹⁵⁾. It is in the school environment that the health team achieves a greater interaction with children to carry out educational activities that can raise awareness and make them co-responsible for their health⁽³⁰⁾.

In the context of the present study, the fortification of foods with micronutrients can be made anywhere the child has the meals – at home, daycare center, schools, or any other place that is appropriate for action⁽³¹⁾. However, considering healthy eating as an educational content, parents and educators have agreed over the years that the school needs to take a leading role in this work⁽³²⁾ and formulate mechanisms to insert the family group in the process of student's collective learning, strengthening the parents-schools binomial⁽³³⁾. The parents of the students recognized the importance of the partnership and believed the school was an adequate environment for the development of the strategy, as highlighted in the following statements:

"[...] the initiative is very good, because where I live very far from the ESF. So, the joint work between the ESF and the school makes it easier for us parents who sometimes do not have time to take our children there. Thus, it allows more children to participate in the program, even the most needy who do not have the money to afford supplementation or cannot get around for long distances" (P2).

Parents understand the school as an important health-promoting environment because it is where students stay a large part of the day and can have access to a balanced and healthy diet. This is particularly beneficial in view of the low purchasing power and the lack of access to information in families assisted by the food fortification strategy. Parents emphasized the importance of implementing the program

in the school environment, as exemplified in the following statements:

"[...] this joint attitude helps to improve health in a general way; a program that prevents and treats diseases avoids overwhelming demand in ESF and hospitals as children get sick less often" (P5).

"[...] because they spend a lot of time at school; so, here is a great place for them to eat well, because at home we usually cannot give all the food they need" (P7).

There are studies that report the high prevalence of children's parents and caregivers who do not follow food guidelines provided by health professionals. In this sense, the strategies carried out through partnership between schools and health care centers help reduce the negative consequences of this non-adherence^(34,35). That is why public health policies on food and nutrition are being put into practice in such environment⁽³⁶⁾.

The reports show that the school represents, from parents' point of view, an outstanding environment for carrying out food and nutrition education programs as it provides the formation of new habits in childhood, a period when their experiences extrapolate the family context. This is in agreement with other studies which report that parents believe that the meals offered to children in daycare centers are more adequate than those offered at home⁽³⁶⁾. They also emphasize the need for communication between the daycare center and the family in order to strengthen the full development of children⁽³⁷⁾. However, parents understand that healthy eating habits are important and should not be a responsibility of the school environment alone; it should rather be promoted by the joint action of current government programs, daycare centers and the family^(38,39).

FINAL CONSIDERATIONS

The present study contributes to the promotion of children's health by seeking to identify the perception of the agents that directly influence the formation of children's eating habits, especially those children who spend most of their time away from family members, that is, in public daycare centers. The analysis of parents' perceptions allowed to identify a positive opinion about the strategy for the fortification of the food provided to their children as it strengthens children's health and prevents diseases.

In addition, it was possible to identify the positive impact of this strategy on the community as a whole, which was made possible through the partnership between the school and the ESF aimed at health promotion. This intersectorality is an eminent and necessary practice for health actions to reach the most remote and needy public,

inserting the perception of co-responsibility for their own health and the health of their family. The concept and adoption of co-responsibility in health are essential for emancipation and self-assertion in individual health care attitudes. However, this does not actually occur due to the unfavorable living conditions and the poor knowledge about health that this public has.

In an interdisciplinary context, it should also be considered that responsibility for infant feeding, particularly with regard to adequate intake of nutrients to support the child's full growth and development, should be shared among different social groups, including – in addition to the family – education centers where children spend most of their day and carry out daily activities, ESF centers and municipal, state, and federal governments. Finally, all those who are directly or indirectly involved in child care.

Thus, in addition to developing health intervention projects targeted at this population, it is fundamental to assess the perception of the agents that put these programs in effect, as it has been proposed in the present study.

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