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Knowledge and approach to healthy eating by primary education teachers

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Abstract

The study evaluated the knowledge and approach in heathy eating of teachers of urban municipal public schools in Montes Claros-MG, Brazil. In a descriptive and quantitative approach, 158 teachers from 28 schools were interviewed in 2013. They answered a questionnaire with open questions regarding the approach to health eating (QAAS) and other with multiple-choice questions on knowledge on nutrition and strategies for healthy eating (QN). Of 12 topics contained in the QAAS, seven were not addressed by most teachers, who in general seldom adopted alternative teaching methodologies. The positive point highlighted by the teachers was student progress; the negative aspects were lack of didactic material and negative influence of the family. The QN showed that 73% of the teachers did not receive specific training to address the issue, and that 72.15% showed moderate knowledge on it. In conclusion, the methodologies and didactic resources adopted in health eating teaching at school are still incipient, timid and poorly exploited. Moreover, the knowledge of the teachers is only moderate, indicating that they should undergo specific training programs on health eating and nutrition.

Key words: Student Eating. Eating and Nutrition Education. Health Promotion.

Introduction

Healthy eating is a habit that should be learned and practiced since childhood because the sooner it is adopted the greater the chances to be continued in later life stages.[1,2] Thus, from the first years of life, individuals should systematically receive comprehensive information on the quality and types of foods and dishes.[3]

Promoting healthy eating in school is a key strategy in the area of nutrition as children spend many hours in this environment. Besides providing practical guidance on healthy habits, the school environment has potential to enable the contextualization of knowledge within the students' universe by contextualizing and integrating the approaches to the family, community and social reality.[4] Thus, more than just providing information, schools promote the development of healthy lifestyle values.[2,5]

The role of teachers as source of information and a communication element is all-important in the school environment. In order that they can work efficiently in health promotion, it is vital that these professionals have up-to-date information on health, irrespective of the disciplines they teach, and apply the contents transversally and inter-disciplinarily in their pedagogic practices.[5-7] In addition, it is important that they know how to make use of appropriate teaching aids[8] so that they can deliver not just knowledge on healthy eating habits but also influence the attitude and practice of such habits by schoolchildren.[2]

One aspect to be considered is that teachers' knowledge on the subjects' contents is not enough for them to effectively play their role of educator in the health area; it is necessary that they realize the importance of their performance,[4] as the deeper they are involved in the students' social reality more they become a reference of knowledge and behavior for them.[6,9,10] Thus, to address health educational topics and obtain satisfactory practical results, it is important that the teachers are provided with high quality instruction. Training should be focused on the educators' practical skills, i.e., on how they address health issues in the school environment.

To support plans that help improve health-focused approaches in the classroom, the knowledge or awareness on "healthy eating" by teachers of public primary schools in Montes Claros-MG was assessed as well as how they address this topic in the classroom.

Methodology

Cross-sectional study conducted from August to October 2013 in 28 public primary schools of the municipal school network in Montes Claros, state of Minas Gerais, Brazil. According to data from the Municipal Education Secretary, during the study period 525 permanent teachers and

115 hired teachers were working in the public network, 550 being in regular activity.

The target population consisted of teachers of the first five years (grades) of the primary school who were effectively on duty. From a list provided by the Municipal Education Secretary, the teachers to be assessed were selected by simple random sampling. A minimum sampling of 182 teachers was estimated, considering a 5% margin of error, 90% confidence interval and 50% expected event frequency.

The criteria for the teachers' inclusion were the following: answering the questionnaires in at least one of three attempts; agreeing to attend the research; signing the Free and Informed Consent Form. Teachers of special schools and religious education were excluded, as well as teachers who had taken sick or vacation leaves. Also excluded were physical education teachers, because although they are qualified to work on nutrition issues, in practice they prioritize physical activities.

The teachers answered a Structured Questionnaire on Approaches to Healthy Nutrition (QAAS),[11] which investigated the contents taught in classroom, approach methods, successful results and teachers' degrees. The topics listed in the QAAS were extracted from the textbook collection "*Conhecer e Crescer*" ("Know and Grow"), 2013 edition, adopted by the municipal school network of Montes Claros, for the 1st to the 5th school grades. By addressing the contents through an interdisciplinary and contextualized approach, the topics ranged from foods origin and composition to hygiene and health aspects, as described in Table 1. Answers relating to methodology and the positive and negative aspects of the educational activities that were developed in classroom were descriptive, in open questions.

A questionnaire on Nutrition Knowledge and Strategies for Healthy Eating (QN),[12] was also administered, containing multiple-choice questions that assessed knowledge on good and bad fats, healthy eating, healthy dietary practices, salt content in foods and nutrition-related diseases. The level of nutrition knowledge was measured according to the number of right answers per domain, being classified as poor (below 60%), moderate (between 61 and 80%) and high (above 81%).

The interviews were conducted in the schools during working hours. The QN and QAAS questionnaires were delivered to the teachers and collected three days later. Data were analyzed by descriptive statistics using the software SPSS version 18.0.

The study complied with the ethical precepts for human research, according to the provisions of Resolution no. 196/96 of the Brazilian National Health Council. The experiment protocol was approved by the Ethics Committee of SOEBRAS (Brazilian Education Association / United Faculties of the North of Minas Gerais), process no. 387.524. The school boards authorized the administration of the questionnaire, and the respondents were aware that they could quit participating at any time.

Results

Of a total of 158 teachers (response rate = 86.81%), 98% were female and only 2% male. Most of the teachers were 38 and 47 years old (50.63%); 23.42% were younger and 19.95% older.

From the QAAS' answers, it was found that although all topics included in the questionnaire, which were based on the textbook (Table 1), were cited by at least one teacher, the contents were not developed by all of them. The topics that were more discussed in classroom were "importance of nutrition", "foods hygiene" and "what good nutrition is". However, of 12 topics, seven were not addressed by most of the teachers, and more than 60% of them did not discuss "vitamins and minerals", "food groups (food pyramid)", "overeating don'ts, "energy foods", "building foods" and "lack and excess of food".

Table 1. Food and Healthy Nutrition topics proposed on the textbook and discussed in classroom. Montes Claros-MG, Brazil. 2013.

Topics	YES		NO	
	n*	%	n*	%
Importance of nutrition	149	94.30	09	5.70
What good nutrition is	131	82.90	27	17.10
Vitamins and minerals	63	39.87	95	60.13
Fertile soil, healthier food	68	43.04	90	56.96
Nutritious foods	76	48.10	82	51.90
Foods hygiene	132	83.54	26	16.46
Where foods come from	95	60.13	63	39.87
Food groups (pyramid)	51	32.28	107	67.72
Overeating don'ts	56	35.44	102	64.56
Energy foods	47	29.75	111	70.25
Building foods	30	18.99	128	81.01
Lack and excess of food	45	28.48	113	71.52

Still regarding the QAAS, the teachers reported that they used varied methods to address the topics to the children (Table 2), but, in general, they used research on books, newspapers and magazines, and lecture-based classes. Other methods, such as visual and audio aids were not much used.

Table 2. Methods used to address the topic "food and nutrition" in the classroom. Montes Claros-MG, Brazil, 2013.

Method	n (158)	%
Visual aids	01	0.63
Posters and boards	01	0.63
School meals (lunch)	01	0.63
Drama	02	1.26
Audio aids	02	1.26
Preparation of recipes	02	1.26
Display and analysis of food labels	05	3.16
Teamwork	05	3.16
Playful learning activities	05	3.16
Dynamics	06	3.80
Internet/computer	09	5.70
Practical activities and food tasting	11	6.96
Videos and movies	19	12.03
Debates and discussion panels	26	16.46
Research on books, magazines and newspapers	55	34.81
Textbook	27	17.09
Activities resolution in classroom	32	20.25
Discussion-based class	34	21.52
Lecture-type class	43	27.22
Lectures	03	1.90
Interviews	04	2.53

The teachers also cited in the QAAS 12 positive aspects (Table 3) and 14 negative aspects (Table 4) of activities developed in classroom. Among the positive aspects, the major ones were "learning and acquired knowledge" followed by "interest"; and among the negative aspects, "lack of didactic materials" and "negative influence of family".

Table 3. Positive aspects in addressing topics related to food and nutrition in classroom. Montes Claros-MG, Brazil. 2013.

Aspects	N(158)	%
Interest	22	13.92
Participation and involvement	09	5.70
Curiosity	05	3.16
Previous knowledge	06	3.80
Awareness	17	10.76
Easy understanding by children	05	3.16
Important findings	01	0.63
Reflections/insights on the matter	03	1.90
Change of eating and cleaning habits	21	13.29
Learning and acquired knowledge	40	25.32
Influence of school meals	02	1.26
Change in the institution (banned junk food from school)	01	0.63

Table 4. Negative aspects in addressing topics related to food and nutrition in classroom. Montes Claros-MG, Brazil. 2013.

Aspects	n (158)	%
Goals not accomplished	2	1.27
Negative influence from family	27	17.09
Resistance to changes of habits	8	5.06
Lack of previous knowledge	2	1.27
Poor knowledge of the students and family	3	1.90
Lack of didactic material	16	10.13
Students' lack of interest	3	1.90
Lack of access to foods	2	1.27
Influence of the foods industry	12	7.59
Lack of training programs for teachers	6	3.80
Inconsistency between the school meals and what is taught	3	1.90
Student's socioeconomic condition	12	7.59
No negative aspects	62	39.24

Regarding the competence to address food and nutrition themes in the classroom, 117 teachers (74%) stated that they had not received specific training.

Regarding the QN, which contained questions to assess the teachers' knowledge on food and nutrition (Table 5), the highest number of right answers was in the domain related to "salt content in foods". In the overall assessment, of the 158 teachers interviewed, nine (5.7%) showed poor level of knowledge; 35 (22.15%) high level of knowledge; and 114 (72.15%) moderate knowledge.

Table 5. Right answers to the questionnaire on food and nutrition knowledge and strategies for healthy eating administered to primary education teachers. Montes Claros-MG, Brazil. 2013.

Domains	Individuals who correctly answered to the questions (n=158)	%	Knowledge level
Knowledge on *trans* fat	115	72.78	Moderate
Perception of healthy nutrition	117	74.05	Moderate
Knowledge on healthy eating practices	122	77.22	Moderate
Knowledge on salt content	140	88.61	High
Knowledge on food-related diseases	106	67.09	Moderate
Average	120	75.95	Moderate

Discussion

Health actions generally follow the traditional biomedical model, that is, they are primarily focused on the logic of health prevention and recovery.[13] However, health, food and nutrition safety actions,[13] such as food education, can be valuable tools to support public health policies, respecting the sociocultural aspects of the target audience.[14] When such audience consists of schoolchildren, teachers are a key element for a successful action, once they are able to contextualize the contents in the students' everyday life. However, as shown in this study, the performance of this professional is still limited. Implementation of nutrition education still requires training of the teachers in order to enable them to work with more dynamic methodological alternatives and update specific knowledge, particularly in the public municipal schools of Montes Claros-MG.

In the present study, slightly more than half of the individuals were between 38 and 47 years old, revealing a mature group and within the age range in the city, which, according to the Municipal Education Secretary, varies from 18 to over 58 years. The topics addressed by the teachers consisted of those contained in the textbook for the 2nd and 3rd grades of the primary school, but which were not part of the compulsory teaching program. Such curricular flexibility can explain why more than half of the teachers interviewed addressed only four of the 12 themes listed. The results of Table 1 suggest that more common topics, such as "what good nutrition is", "importance of nutrition" and "foods hygiene" are addressed more in-depth than specific topics such as "what are bodybuilding foods" or "foods pyramid".

Although not compulsory, nutrition contents are addressed as transversal matters in the National Curriculum Parameters (NCPs) of health education. NCPs still represent an innovative, flexible, integrating and citizenship-promoting proposal.[15] As a subcategory of NCP, nutrition contents are often addressed informally in the classroom, without recording the activities or evaluating these practices. However, due to its importance, some authors advocate its inclusion in the primary education's mandatory contents. Such measure requires investments for implementation and compliance with basic technical-scientific requirements,[16] but also confers legitimacy and reinforces the need to address such contents by educators.[17]

Nutrition guidance can be provided through diverse methodologies such as direct instruction (lecture-like classes), group dynamics, guided reading, practical experiences, use of videos, movies and drama.[18] In the present study, the teachers addressed the matter mainly through research (in books, magazines and newspapers), dialogic classes and resolution of activities in classroom, but also used traditional methods such as monologic classes.

It could be noted that diversification of the methods utilized by the respondents was still timid. For example, some resources such audiovisual aids should not be mere learning supporting tools; they should be thought-provoking and not merely contemplative and with expressive emphasis on images and didactic schemes that lead students to thinking rather than just printing ready-made knowledge.[16] This idea is consistent with the active methodology proposal, which is based on the principle that children are in development and their physical and intellectual growth depends on spontaneous and natural activities, which can be guided by the teacher to new discoveries.[19] The textbook collection "*Conhecer e Crescer*" leads to the development of said methodology, once it proposes to work the themes contextually and integrated with the students' reality. However, whatever the strategies used, it is important that they be properly planned to meet the expected goals.[18]

Nutrition education should be included in the primary education program with methods that comply with pedagogic premises, such as: 1) dialogue with the student, so as to build coordinated actions and not just convey information; 2) content that makes sense to the students; 3) problem-solving teaching, which leads to thinking on the causes, mechanisms and solutions of nutrition issues; 4) transdisciplinary approach, integrated with the other subjects of study; 5) play, motivational activities, mediating the children's understanding of reality; 6) constructivist teaching; and 7) citizenship-building education, fostering critical thinking and entrepreneurial sense.[16] In addition, educators should be comfortable in the classroom and improve their communication with students, increasing the potentials of teaching and learning. First, teachers should build an empathetic relationship with students, seeking to map interests, points of view, expectations, and others, and then find out the students competencies and the contributions that each one can make to the learning process.[14]

Associated with the lack of dynamics in the classes, the teachers reported facing lack of educational material on nutrition education. Being nutrition a transversal subject in the school program, it is not necessary to develop a closed project to approach it, but master guidelines should be clearly designed to help teachers develop relevant contents.[14] In this sense, the National Education Development Fund (FNDE) included in the rules for implementation of the National School Feeding Program (PNAE) guidelines to incorporate food and nutrition education in the learning process that permeates the school program, addressing this topic and the development of healthy practices under the perspective of food and nutrition safety.[20] Even though it represents a major advance, development and availability of dynamic didactic resources are still necessary to support the teachers' actions.

The teachers in this study mentioned another major negative point, which is the negative influence of the family on the children's eating habits. This shows that school and family work in opposite directions, i.e., while schools indicates the ideal direction to healthy eating, the students' reality is completely different. The role played by the family regarding food and nutrition and in developing healthy eating habits in the children is unquestionable, once it is responsible for the concretization of the learned content.[21] As it can be inferred from the teachers' perceptions and corroborating other studies, the activities to promote healthy eating should be directed to the entire school community, including students, teachers and parents.[16]

Despite the family's eating habits, an alternative to the practice of healthy eating would be incorporating healthy foods in the school meals. Good foods promote nutrition education in the school, supporting the development of good eating habits, and, according to the National School Feeding Program (PNAE),[20] also contribute to better school performance, reducing school dropout and grade retention. It should be noted that teachers, who are supposed to be role models for students, are not necessarily a positive example of health in the school environment. It is common that teachers buy junk foods for themselves to eat during the class breaks while they face the most diverse restrictions in the school to consume foods that can be considered "healthful". Other studies show that when teachers prefer processed foods to healthy school meals, the students also tend to consume such less nutritious foods.[22] In this regard, it would be important to implement protective measures and regulatory actions to prevent the exposure of communities and individuals to factors that encourage unhealthy habits, particularly by teachers [22]

Knowledgeable and motivated teachers can be transforming agents of schoolchildren's eating behaviors,[22] but to master knowledge it is necessary that they receive specific training.[16] However, the teachers assessed in this study reported lacking knowledge to discuss healthy nutrition, and most of them (74%) reported not having received specific training and showed only average knowledge in the assessed domains (Table 5), except regarding "salt consumption", which was

high. Mastering the contents by teachers is essential to improve their actions in nutrition education programs;[23] in fact, the findings of the present study indicate that the respondents have significant knowledge to be acquired.

Training programs are essential to prepare teachers to discuss "transversal topics", which are considered more and more important by social actors, which, according to their points of views, should be part of compulsory school programs.[24] Mastering the most diverse domains and applying them, making use of the most creative, critical and thought-based procedures in a dynamic and attractive manner is a challenge that requires skills usually inexistent in schools that do not even have teachers for all subjects.[25] Anyway, the benefits of engaging in education have already been demonstrated in previous studies that show significant examples of schoolchildren's improved knowledge on food and nutrition taught by teachers that received guidance for the development of an educational project in nutrition education in schools.[11,26]

Capability development cannot either be restricted to a single event or an instrument designed to supply deficiencies of earlier education; it should be a continuing program, part of the educator' assignments and which stops a vicious circle in which there are no trained teachers to teach Nutrition, and teachers are not trained because of lack or failure of specific undergraduate courses.[17] Such training should be provided by health professionals, with local adaptations of contents and objectives, in order not only convey information but also sensitize teachers for their full engagement in this activity.[16] Guidance provided by a qualified professional would not only enable an uniform instruction but also ensure mastery of the contents to be taught by the educator, which will likely contribute to the understanding and practical assimilation of the contents by the students.[11,26]

Final considerations

Following the proposal of the textbook used in public municipal schools in Montes Claros-MG, the "*Conhecer e Crescer*" collection, the teachers showed to address nutrition education in classroom as a transversal topic, i.e., included in different educational programs and projects. The development of this topic in classroom is still based on traditional didactic resources, such as search in books, magazines and newspapers and lecture-based classes.

Teachers showed partial, moderate knowledge in most of the contents proposed in the didactic material. Additionally, they stated not having specific knowledge to an in-depth approach on healthy nutrition. Based on the results and considering the teachers' potential role as health-promoting agents, local training and development programs should be offered in order to optimize their work in this area.

References

1. Madruga SW, AraújoCLP, Bertoldi AD, Neutzling, MB. Manutenção dos padrões alimentares da infância à adolescência.Rev. Saúde Pública2012;46(2):376-386.
2. Brasil.Ministério da Saúde. Saúde na escola. Brasília: Ministério da Saúde;2009. Série B. Textos Básicos de Saúde Cadernos de Atenção Básica, n. 2.
3. Prado BG, Guimarães LV, Lopes MAL, Bergamaschi DP. Efeito de ações educativas no consumo de alimentos no ambiente escolar. Nutrire 2012;37(3): 281-292.
4. Yokota RTC, Vasconcelos TF, Pinheiro ARO, Schmitz BAS, Coitinho DC, Rodrigues MdLCF. Projeto a escola promovendo hábitos alimentares saudáveis: comparação de duas estratégias de educação nutricional no Distrito Federal, Brasil. Rev. Nutr.23(1):37-47.
5. HallalPC. Promoção da atividade física no Brasil: chegou a hora da escola. Revista Brasileiro de Atividade Física e Saúde2010; 15(2):76-77.
6. Oliveira LM. Promoção da saúde na educação física escolar: concepções e propostas na perspectiva de professores do ensino público estadual da região centro-oeste do município de São Paulo. Motriz 2010; 16(2):535-535.
7. Gaglianone CP, Taddei JAAC, Colugnati FAB, Magalhães CG, Davanço G, Macedo L, et al. Nutrition education in public elementary schools of São Paulo, Brazil: the reducing risks of illness and death in adulthood project. Rev. Nutr. 2006; 19(3):309-320.
8. Fernandez PM, Silva DO. Descrição das noções conceituais sobre os grupos alimentares por professores de 1ª a 4ª série: a necessidade de atualização dos conceitos. Ciênc.Educ.2008; 14(3):451-466.
9. Borges TT, Rombaldi AJ, Knuth AG, Hallal PC. Conhecimento sobre fatores de risco para doenças crônicas: estudo de base populacional. Cad. SaúdePública 2009; 25(7):1511-1520.
10. Doyle EI,Feldman RH. Are local teachers or nutrition experts perceived as more effective among Brazilian high school students? J. Sch. Health1994; 64(3):115-118.
11. Detregiachi CRP, Braga TMS. Projeto "criança saudável, educação dez": resultados com e sem intervenção do nutricionista. Rev. Nutr. 2011;24(1):51-59.
12. GuadagninSC. Elaboração e validação de questionário de conhecimentos em nutrição para adultos [dissertação]. Brasília: Faculdade de Ciências da Saúde, Universidade de Brasília; 2010.
13. Santos LAS.O fazer educação alimentar e nutricional: algumas contribuições para reflexão.Ciênc. Saúde Coletiva 2012; 17(2):455-462.
14. Brasil.Ministério da Saúde. Redenutri. Rede de nutrição do Sistema Único de Saúde. Brasília: Ministério da Saúde;2010. Texto de Sistematização 06: Educação alimentar e nutricional.
15. Brasil, Ministério da Educação e do Desporto. Parâmetros curriculares nacionais 1996. Brasília: MEC; 1996.
16. BizzoMLG, LederL. Educação nutricional nos parâmetros curriculares nacionais para o ensino fundamental. Rev. Nutr.2005; 18(5):661-667.

17. Brasil.Ministério da Saúde.Guia alimentar para a população brasileira: promovendo a alimentação saudável.Brasília: Ministério da Saúde; 2008. Série A.Normas e Manuais Técnicos.

18. PhilippiST. Educação nutricional e pirâmide alimentar. In: PhilippiJRA, Pelicioni MCF, organizadores. Educação ambiental e sustentabilidade. São Paulo: Manole; 2005. p. 813-825.

19. PilettiN, PilettiC.História da educação. São Paulo: Ática; 1995.

20. Brasil.Fundo Nacional de Desenvolvimento da Educação. Portal do FNDE [Internet]. PNAE. Brasília: MEC; 2009.Disponível em: http://www.fnde.gov.br/

21. Marin T, Berton P, Santo LKRE. Educação nutricional e alimentar: por uma correta formação dos hábitos alimentares. RevF@pciência 2009; 3(7):72-78.

22. Fontes PG, Razuck RCSR, Razuck FB. A influência do professor nos hábitos alimentares. In: Anais do VII Encontro Nacional de Pesquisa em Educação em Ciências,Campinas; 2011.

23. Souza JA. Conhecimentos nutricionais, reprodução e validação do questionário [dissertação].Porto: Faculdade de Medicina, Universidade do Porto; 2009.

24. Brito AKA, Silva FIC, Franca NM, Nanci M. Programas de intervenção nas escolas brasileiras: uma contribuição da escola para a educação em saúde. Saúde Debate2012; 36(95):624-632.

25. Costa GMC, Cavalcanti VM, Barbosa ML, Celino SDM, França ISX, Sousa FS. Promoção de saúde nas escolas na perspectiva de professores do ensino fundamental. Rev. Eletr. Enf. 2013; 15(2):506-15.

26. Longo-Silva G, Taddei JAAC, Konstantyner T, Toloni MHA. Percepções de educadores de creches acerca de práticas cotidianas na alimentação de lactentes: impacto de um treinamento. Ciênc. Saúde Coletiva 2013; 18(2):545-552.

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