

## INTEGRATIVE REVIEW ON DIETARY ASSESSMENT INSTRUMENTS IN SCHOOL-AGE CHILDREN

Carla Sílvia Neves da Nova Fernandes<sup>1</sup>, Goreti Filipa Marques<sup>2</sup>, Constança Festas<sup>3</sup>, Fátima Ferreira<sup>4</sup>, Cristiane Silva<sup>5</sup>

**ABSTRACT:** Information on a population's dietary intake enables the identification of individuals who are at nutritional risk. The objective of the present study was to identify and analyze existing dietary assessment instruments in school-age children. An integrative review was carried out from 2010 to 2016. For analysis, nine articles were selected according to established inclusion criteria. These enabled the organization of the results into two thematic areas: dietary assessment instruments and limitations in the use of instruments. The most used instrument was the 24-hour dietary recall. The results showed the need for more comprehensive instruments in order to deal with limitations of current instruments in use.

**DESCRIPTORS:** Diet Surveys; Child; Food Consumption; Feeding Behavior.

### REVISÃO INTEGRATIVA SOBRE INSTRUMENTOS DE AVALIAÇÃO DE CONSUMO ALIMENTAR EM CRIANÇAS EM IDADE ESCOLAR

**RESUMO:** A informação sobre o consumo alimentar de uma população permite identificar os sujeitos que se encontram em risco nutricional. O presente estudo teve como objetivos identificar e analisar instrumentos existentes para avaliação do consumo alimentar em crianças em idade escolar. Realizou-se revisão integrativa no período entre 2010 e 2016. Para a análise, segundo os critérios de inclusão estabelecidos, foram selecionados nove artigos. Estes permitiram organizar os resultados em duas áreas temáticas: Instrumentos de avaliação de consumo alimentar, e Limitações da utilização dos instrumentos. O instrumento mais frequentemente utilizado foi o recordatório de 24 horas. Os resultados revelam a necessidade de instrumentos mais abrangentes que permitam fazer face às limitações dos atuais instrumentos em uso.

**DESCRIPTORIOS:** Inquéritos alimentares; Crianças; Consumo de alimentos; Comportamento alimentar; Hábitos alimentares.

### REVISIÓN INTEGRATIVA SOBRE INSTRUMENTOS DE EVALUACIÓN DE CONSUMO ALIMENTARIO PARA NIÑOS EN EDAD ESCOLAR

**RESUMEN:** La información sobre el consumo alimentario de una población permite identificar a los sujetos que se encuentran en riesgo nutricional. El presente estudio tuvo como objetivos identificar y analizar instrumentos existentes para evaluación del consumo alimentario de niños en edad escolar. Se realizó revisión integrativa en el período entre 2010 y 2016. Para el análisis, según los criterios de inclusión establecidos. Fueron seleccionados nueve artículos. Los mismos permitieron organizar los resultados en dos áreas temáticas: Instrumentos de evaluación de consumo alimentario y Limitaciones a la utilización de los instrumentos. El instrumento utilizado más frecuentemente fue el recordatorio de 24 horas. Los resultados expresan la necesidad de instrumentos más inclusivos que permitan enfrentar las limitaciones de los instrumentos actualmente en uso.

**DESCRIPTORIOS:** Encuestas sobre Dietas; Niño; Consumo de Alimentos; Conducta Alimentaria; Hábitos Alimentarios.

<sup>1</sup>Nurse. Doctor of Nursing. Professor at the University Fernando Pessoa. Porto, Portugal.

<sup>2</sup>Nurse. Doctor of Nursing. Professor at the Santa Maria Health School. Porto, Portugal.

<sup>3</sup>Nurse. Doctor of Nursing. Professor at the Catholic University of Portugal. Porto, Portugal.

<sup>4</sup>Nurse. Master of Public Health. Professor at the Santa Maria Health School. Porto, Portugal.

<sup>5</sup>Nurse. Doctor of Health Sciences. Professor at the Santa Maria Health School. Porto, Portugal.

**Corresponding author:**

Carla Sílvia Neves da Nova Fernandes  
Universidade Fernando Pessoa  
R. do Cidral, 28 - 4490-562 - Póvoa de Varzim, Portugal  
E-mail: carlasilviaf@gmail.com

**Received:** 21/12/2016

**Finalized:** 13/09/2017

## ● INTRODUCTION

Feeding is important in any stage of life, deserving special attention in childhood, due to specific nutritional needs of this age group<sup>(1-2)</sup>. Obesity is considered a global epidemic, with little evidence on its reduction or that it has reached a higher level<sup>(3)</sup>. In recent years, many studies have been carried out to this level, evidencing early determinants and consequences<sup>(2-3)</sup>. Overweight in adult age is associated, in the long term, with consequences for health, including hypertension, hyperglycemia, hypercholesterolemia, cholelithiasis, sleep apnea, and orthopedic disorders<sup>(3-4)</sup>.

In addition, overweight children seem to have lower self-esteem<sup>(5)</sup>, associated with the development of social and psychological problems, such as bullying or other types of discrimination. Weight-related bullying is among the most common forms of moral harassment faced by young people. A situation that is shared by educators, parents, and students<sup>(6)</sup>.

According to a literature review, there are some early possible markers of obesity, such as childhood obesity<sup>(3)</sup>, which shows strong evidence that early intervention is important and must be directed to support healthy growth and development.

Behavior and attitudes, especially in younger ages, are not always in accordance with known and recommended best practices. Family is certainly the foundation, solidity, and reference necessary for young people, who experience turbulences in adolescence and youth<sup>(2,7)</sup>. However, in western societies, childhood itself takes place outside this context. It is in early childhood that children gradually come across other educational and socially structuring processes. Schools start assuming significant roles, sometimes substituting families. Critical thinking of confrontation emerges (many times in opposition) from the referential of peer group and other emerging adult models of the social-environmental context.

Therefore, intervention efforts must start in early age, in order to promote healthy eating and ensure better quality of life; however, knowing individuals and their communities is essential. Considering the emergence of children-youth obesity epidemics, facing and knowing it is of utmost importance, as well as estimating risks and making necessary interventions. For this purpose, collecting information on dietary intake is imperative to identify those at nutritional risk. However, investigating the dietary intake of children is a challenging task, and there is controversy in the literature with regard to the best method<sup>(8-10)</sup>.

Being aware of this difficulty and making use of integrative literature reviews, the objective of this study was to identify dietary assessment instruments used in school-age children in scientific productions of recent years.

## ● METHOD

The present study aimed at grouping the state-of-the-art on nutritional assessment instruments in use. Integrative reviews, which present a significant incorporation in nursing research and evidence-based practice, enable the gathering of data from studies developed by means of different methodologies<sup>(11)</sup>. The synthesis of the results of relevant studies speeds up the transfer of knowledge to practice<sup>(12)</sup>.

Considering knowledge that was intended to synthesize, the review had the following question as starting point: "What are the nutritional assessment instruments used in school-age children?"

In order to respond to the question, a search was carried out in the Cumulative Index to Nursing & Allied Health Literature (CINAHL), Medical Literature Analysis and Retrieval System Online (MEDLINE), Nursing & Allied Health Collection, COCHRANE, MedicLatina, NHS Database, and Health Technology Assessments bibliographical databases. Tracking of the literature was carried out based on the use of the following descriptors: Nutrition Surveys AND feeding behavior AND Child, using Boolean language for cross-checking of sets in analysis in English, Portuguese, and Spanish.

The research was delimited by title, keywords or descriptors, and abstract, aiming at marking the set of documents to be tracked. After defining the starting question and respective descriptors, the

research protocol was defined (Figure 1). The bibliographical search was carried out from May to June 2016.

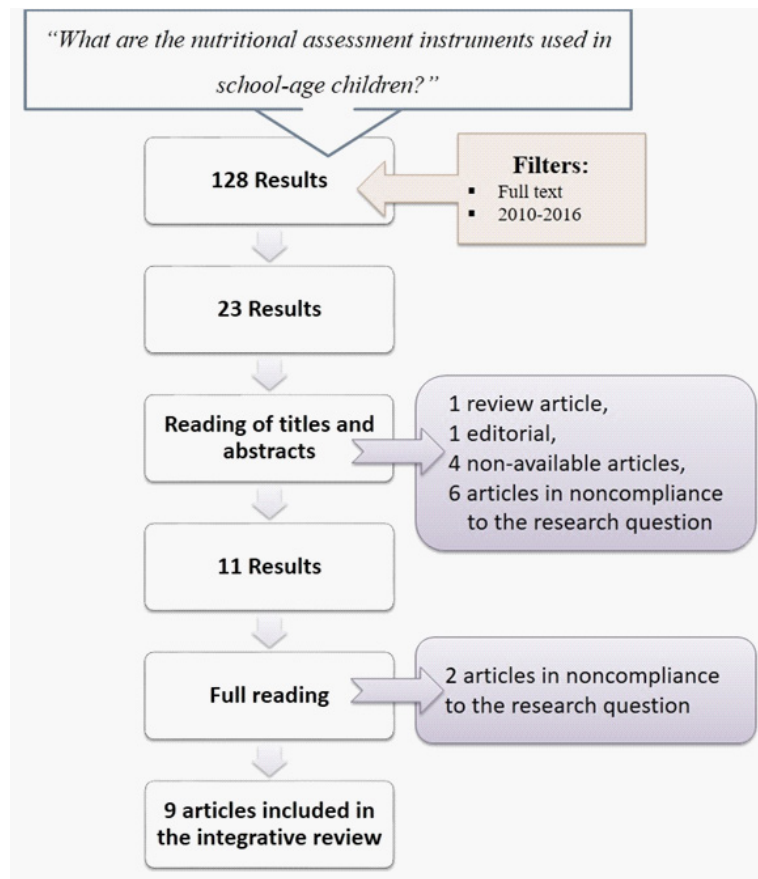


Figura 1 - Protocolo Pesquisa. Porto, PT, 2016

Inclusion criteria were scientific articles mentioning the use of nutritional assessment instruments, and published from 2010 to 2016. Exclusion criteria were review articles, as well as those that did not respond to the research question.

Among 23 articles identified, the sample was made up of nine articles that met the inclusion criteria. Data analysis is similar to that of conventional studies. This phase implies in critical appreciation of each study<sup>(12)</sup>, based on the research question, reason, and purpose of obtaining responses<sup>(11)</sup>.

## ● RESULTS

The nine articles included in the sample are presented in Table 1, with the following information: authors, title, year, journal, and objective.

Table 1 - Articles analyzed. Porto, Portugal, 2016. (continues)

Code	Authors	Title	Year	Journal	Objective
A1	Popkin B, Duffey K <sup>(13)</sup>	Does hunger and satiety drive eating anymore? Increasing eating occasions and decreasing time between eating occasions in the United States	2010	The American Journal of Clinical Nutrition	To examine meal-patterning trends.

A2	Bevans K, Sanchez B, Teneralli R, Forrest C <sup>(14)</sup>	Children's eating behavior: the importance of nutrition standards for foods in schools	2011	The Journal of School Health	To evaluate the contributions of food offerings and participation in school lunch programs on children's overall eating behavior.
A3	Kant A, Graubard B <sup>(15)</sup>	20-Year trends in dietary and meal behaviors were similar in U.S. children and adolescents of different race/ethnicity.	2011	The Journal of Nutrition	To analyze changes in the American population's dietary intake among different races/ethnicities.
A4	Chung A, Perrin E, Skinner A <sup>(16)</sup>	Accuracy of child and adolescent weight perceptions and their relationships to dieting and exercise behaviors: a NHANES study	2013	Academic Pediatrics	To analyze how children and adolescents perceive their weight comparing to their actual weight, associated with weight-loss efforts and behaviors.
A5	Madowitz J, Liang J, Peterson C, Rydell S, Zucker N, Tanofsky-Kraff, Harnack L, et al. <sup>(10)</sup>	Concurrent and Convergent Validity of the Eating in the Absence of Hunger Questionnaire and Behavioral Paradigm in Overweight Children	2014	The International Journal of Eating Disorders	To evaluate the concurrent validity of the Eating in the Absence of Hunger questionnaire-parent report of child (EAH-PC) and child self-report (EAH-C) with the EAH behavioral paradigm (EAH%) and usual dietary intake.
A6	Elder J, Arredondo E, Campbell N, Baquero B, Duerksen S, Ayala G, Crespo J, Slymen D, McKenzie T <sup>(3)</sup>	Individual, family, and community environmental correlates of obesity in Latino elementary school children	2010	The Journal of School Health	To analyze multiple environmental levels in the weight status of Latino children.
A7	Obeidat B, Shriver B, Roman-Shriver C <sup>(4)</sup>	Factors involved in the persistence of overweight among children enrolled in the supplemental food program for women, infants, and children.	2010	Maternal and Child Health Journal	To investigate differences among children aged between two and five years enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children.
A8	Niu J, Seo D, Lohrmann D <sup>(17)</sup>	Weight perception and dietary intake among Chinese youth, 2004-2009.	2014	International Journal of Behavioral Medicine	To investigate the extent and correlates of weight misperception and dietary intake among Chinese youth.
A9	Affenito S, Thompson D, Dorazio A, Albertson A, Loew A, Holschuh N <sup>(18)</sup>	Ready-to-eat cereal consumption and the School Breakfast Program: Relationship to nutrient intake and weight.	2013	The Journal of School Health	To analyze the association of ready-to-eat breakfast cereal consumption with the intake of nutrients and weight of students.

The articles analyzed were published in the time delimitation between 2010 and 2016, and their distribution is shown in Figure 2.

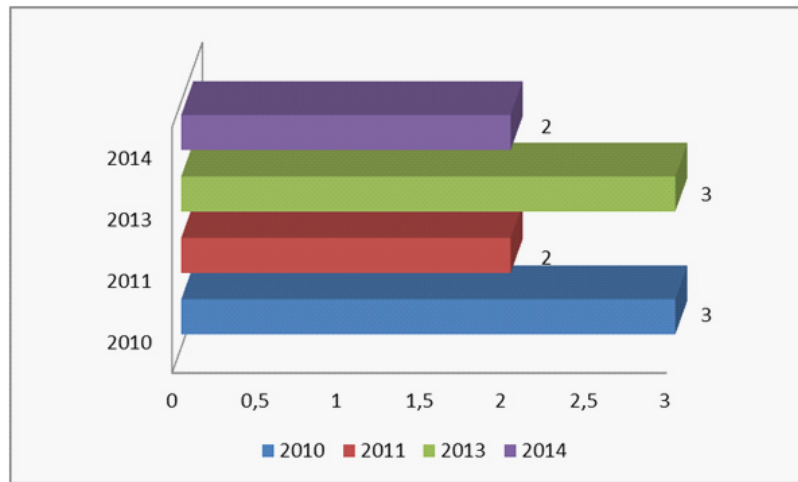


Figure 2 - Distribution of studies according to the year of publication. Porto, Portugal, 2016.

The results presented a higher concentration of productions in 2010 and 2013. It is worth mentioning that articles found in 2015 and 2016 did not respond to the research question. Regarding the language of publication, they were all published in English. With regard to the place of development of the studies, most (n=eight) were carried out in the United States and only one in China.

## ● DISCUSSION

The analyzed studies were categorized into two areas: dietary assessment instruments and instruments' limitations, which conducted the discussion with the purpose of answering the study question.

### Dietary assessment instruments

Dietary intake assessment in clinical practice is carried out with the purpose of providing support for the development and implementation of nutritional plans<sup>(9)</sup>. The appropriate measure of a diet is an extremely complex and challenging task for a nutritional epidemiologist, and, in the case of children and adolescents, the task becomes even more complex and of great concern<sup>(19)</sup>. In the articles analyzed, the use of the 24-hour dietary recall, food frequency questionnaires, and food diary was reported.

### 24-hour dietary recall

The 24-hour dietary recall consists of obtaining written or verbal information on the dietary intake of the previous day<sup>(19)</sup>. This includes the definition and quantification of all foods and beverages consumed prior to the interview, which may be the last 24 hours or the previous day, which is considered the most common<sup>(9)</sup>.

In the research carried out in study A1, which aimed at examining meal-patterning trends, by means of a cross-sectional study carried out with children aged between two and eight years, the authors used the 24-hour dietary recall in three stages. In the first stage, the Nationwide Food Consumption Survey (NFCS) 1977-78 was used, which obtains information on all foods consumed at home and outside home during three consecutive days, using only one interviewer<sup>(13)</sup>.

In the second stage, the Continuing Survey of Food Intakes by Individuals (CSFII) 1994-98 was used with collected data, by means of interviews carried out in two non-consecutive days (3-10 days interval). In the last stage, data of the National Health and Nutrition Examination Survey (NHNES) 2003-06 were used, which included two non-consecutive days of 24-hour dietary data collection. First-day interviews

were carried out by trained dietary interviewers in a mobile unit, whereas second-day interviews were carried out by telephone, three to ten days after the first interview<sup>(13)</sup>.

In study A3, whose objective was to analyze changes in the American population's dietary intake among different races/ethnicities, by means of a cross-sectional study in a population aged between two and 19 years, data from NHANES 1988-94, 1999-02, and 2003-06 were used, of 24-hour dietary recall data<sup>(15)</sup>. Other authors (A4) also used the NHANES, whose objective was to analyze how children and adolescents perceive their weight comparing to their actual weight, in a population of children aged between eight and 15 years<sup>(16)</sup>.

In study A5, the authors used, among other instruments, the 24-hour dietary recall, applied in three non-consecutive stages, carried out by a trained dietary interviewer in a population aged between eight and 12 years<sup>(10)</sup>.

Study A9 had the purpose of analyzing the association of breakfast cereal consumption with the intake of nutrients and weight of students aged between five and 18 years. The data were extracted from the Third School Nutrition Dietary Assessment Study (SNDA-III) 2004-05, which carried out a dietary recall, followed by interviews with parents<sup>(18)</sup>.

### **Food frequency questionnaire (FFQ)**

The main objective of the FFQ is to know the usual consumption of a specific population group, and it was developed to obtain information on dietary patterns and intake of specific food and nutrients<sup>(19)</sup>. It is also important to assess the consumption frequency of specific foods, both those that may compromise the quality of the diet and health status if consumed in excess, and those that are source of nutrients. In this case, based on a list of foods, information on the consumption frequency of each item is requested<sup>(9)</sup>.

Regarding analyses, in study A2, the objective was to evaluate food-supply contributions and participation in school lunch programs, associating them with the eating behavior of children. The authors also used the Student Eating Behavior instrument. This scale is made up of eight items to assess positive and negative eating behaviors, as well as three additional items regarding the consumption of fried potatoes, sweets, and fast food<sup>(14)</sup>.

In a previously mentioned study (A5) on the validity of a questionnaire on eating in the absence of hunger and behavior of overweight children, added to the 24-hour dietary recall, two other questionnaires were used: The Eating in the Absence of Hunger Questionnaire for Children and Adolescents (EAH-C) and the Eating in the Absence of Hunger Questionnaire for Children and Adolescents Parent Report of Child (EAH-PC). They both have 14 questions, divided into three subscales: "negative affectivity", "extra feeding", and "fatigue/boredom". The EAH-C is filled by children or adolescents, whereas the EAH-PC is filled by parents<sup>(10)</sup>.

In the study carried out with children aged between two and five years (A7), the dietary intake of the children was assessed by means of a food frequency questionnaire with 29 items, entitled Food Frequency Questionnaire (FFQ). Two separate lists of food frequency were used; one to assess the daily consumption of basic food and the other to assess the weekly consumption of other foods<sup>(4)</sup>. This instrument was also used in study A6; however, it was filled by parents, in a population of children aged between five and seven years. Some food considered obesogenic was added to the Food Frequency Questionnaire (FFQ), evaluating their consumption frequency<sup>(3)</sup>.

### **Food record or diary**

This method consists of writing down in previously structured forms all foods and beverages consumed and their respective amounts during a specific time, often throughout one day<sup>(19)</sup>, and it may be applied throughout three, five, or seven days<sup>(9)</sup>. The method could be more comprehensive and accurate with the use of a weighing scale or with the help of portions of different sizes or representations of what was consumed in traditional homemade measures used<sup>(9)</sup>.

Similar to the 24-hour food diary, the food record collects information when the child or person in charge records, in especially drawn forms, all foods and beverages consumed<sup>(19)</sup>.

A8 is the only study that refers to this instrument, whose objective was to investigate the extent and correlates of the weight misperception and dietary intake among Chinese youth, using the dietary intake record for three consecutive days<sup>(17)</sup>.

### Instruments' limitations

Although not always explored throughout the analyzed articles, dietary assessment has a critical role in the research area and in the development of programs, since each instrument presents advantages and disadvantages with its application. Dietary intake studies use effective and low-cost instruments; however, due to the use and limitations of each method, the choice of the instrument to measure dietary information is not an easy task<sup>(19)</sup>.

In some studies analyzed, some limitations with the use of specific instruments are evidenced. In study A1, the authors point out that the dietary intake self-report based on 24-hour recall may not be representative of the usual consumption of individuals. In addition, there is an underreporting of foods linked to obesity, such as fat and sugar<sup>(13)</sup>. This information is validated by other authors regarding the 24-hour dietary recall<sup>(13,18)</sup>.

Due to the individual variability of food intake, estimates of a single 24-hour recall are not suitable for the estimate of individuals' usual intake. Another concern with the dietary measurement refers to dietary notification errors, especially the intake underreporting of certain foods<sup>(15)</sup>.

Similarly, with application of the food frequency questionnaire in the A2 and A7 studies, the authors mention that, although children are often trustworthy and accurate reporters of their eating behavior, there may be biases in this information<sup>(14,16)</sup>. Another aspect highlighted with regard to the food frequency questionnaire was the need to include information on the size of portions<sup>(4)</sup>.

Although not being mentioned by the authors, each method has advantages when applied in children<sup>(9,19)</sup>. The most appropriate instruments, when the purpose is to quantify and assess the intake of nutrients, are those that are able to collect detailed information on consumption, that is, food consumed and amounts ingested. In this in case, the most used methods are the 24-hour dietary recall and the food diary<sup>(9)</sup>.

## ● CONCLUSION

Measuring food intake is a complex and challenging task, especially in children. In spite of the complexity of dietary assessment, and considering the advantages and limitations of the instruments, this must be part of nutrition food programs. Dietary assessment requires the clear definition of the objectives to be achieved, in order to guide the selection of the instruments, including several factors such as type of diet, age, culture, beliefs, and social and economic environments.

The aim of the present study was to group the existing knowledge on the use of dietary assessment instruments, by means of an integrative review. The analysis of the scientific evidence obtained enabled the organization of the results into two thematic areas: Dietary assessment instruments and limitations in the use of instruments.

The most commonly used instrument in the studies was the 24-hour dietary recall, and the food frequency questionnaire and food diary were also mentioned. Although omitted in the studies analyzed, the food diary is mentioned in the literature as presenting lesser disadvantages, and being considered the most valid method to measure dietary intake, but it must not exceed seven days.

The results showed the need for further development at this level, in order to face the limitations of current instruments in use.

## ● REFERENCES

1. Portugal. Direção-Geral da Saúde. Programa Nacional para a Promoção da Alimentação Saudável. Portugal Alimentação Saudável em números – 2014. Lisboa: DGS; 2014.
2. Elder JP, Arredondo EM, Campbell N, Baquero B, Duerksen S, Guadalupe A, et al. Individual, family, and community environmental correlates of obesity in Latino elementary school children. *JOSH*. [Internet] 2010;80(1) [acesso em 25 nov 2016]. Disponível: <http://dx.doi.org/10.1111/j.1746-1561.2009.00462.x>.
3. Brisbois TD, Farmer AP, McCargar LJ. Early markers of adult obesity: a review. *Obes Rev*. [Internet] 2012;13(4) [acesso em 25 nov 2016]. Disponível: <http://dx.doi.org/10.1111/j.1467-789X.2011.00965.x>.
4. Obeidat BA, Shriver BJ, Roman-Shriver CR. Factors involved in the persistence of overweight among children enrolled in the supplemental food program for women, infants, and children. *Matern Child Health J*. [Internet] 2010;14(2) [acesso em 23 nov 2016]. Disponível: <http://dx.doi.org/10.1007/s10995-009-0457-2>.
5. Lee PY, Cheah WI, Chang CT, Siti Raudzah G. Childhood obesity, self-esteem and health-related quality of life among urban primary schools children in Kuching, Sarawak, Malaysia. *Malays J Nutr*. 2012;18(2):207-19.
6. Puhl R, Luedicke J, King KM. Combating weight-based bullying in schools: is there public support for the use of litigation?. *J Sch Health*. [Internet] 2015;85(6) [acesso em 25 nov 2016]. Disponível: <http://dx.doi.org/10.1111/josh.12264>.
7. Collins C, Duncanson K, Burrows T. A systematic review investigating associations between parenting style and child feeding behaviours. *J Hum Nutr Diet*. [Internet] 2014;27(6) [acesso em 25 nov 2016]. Disponível: <http://dx.doi.org/10.1111/jhn.12192>.
8. Consolmagno DC, Assunção NA, Giovannetti TL, Zeraib DP, Hinnig PF, Freaza SRM, et al. Treinamento de escolares de 7 a 10 anos para o preenchimento de um Diário Alimentar. *Rev. bras. epidemiol*. [Internet] 2009;12(3) [acesso em 19 jun 2016]. Disponível: <http://dx.doi.org/10.1590/S1415-790X2009000300009>.
9. Fisberg RM, Marchioni DML, Colucci ACA. Avaliação do consumo alimentar e da ingestão de nutrientes na prática clínica. *Arq Bras Endocrinol Metab*. [Internet] 2009;53(5) [acesso em 19 jun 2016]. Disponível: <http://dx.doi.org/10.1590/S0004-27302009000500014>.
10. Madowitz J, Liang J, Peterson CB, Rydell S, Zucker NL, Tanofsky-Kraff M, et al. Concurrent and convergent validity of the eating in the absence of hunger questionnaire and behavioral paradigm in overweight children. *Int J Eat Disord*. [Internet] 2014;47(3) [acesso em 25 nov 2016]. Disponível: <http://dx.doi.org/10.1002/eat.22213>.
11. Soares CB, Hoga LAK, Peduzzi M, Sangaleti C, Yonekura T, Silva DRAD. Revisão integrativa: conceitos e métodos utilizados na enfermagem. *Rev. esc. enferm. USP*. [Internet] 2014;48(2) [acesso em 25 nov 2016]. Disponível: <http://dx.doi.org/10.1590/S0080-6234201400002000020>.
12. Whittemore R, Knafk K. The integrative review: updated methodology. *J Adv Nurs*. [Internet] 2005;52(5) [acesso em 24 abr 2016]. Disponível: <http://dx.doi.org/10.1111/j.1365-2648.2005.03621.x>.
13. Popkin BM, Duffey KJ. Does hunger and satiety drive eating anymore? Increasing eating occasions and decreasing time between eating occasions in the United States. *Am J Clin Nutr*. [Internet] 2010;91(5) [acesso em 23 nov 2016]. Disponível: <http://dx.doi.org/10.3945/ajcn.2009.28962>.
14. Bevans KB, Sanchez B, Teneralli R, Forrest CB. Children's eating behavior: the importance of nutrition standards for foods in schools. *J Sch Health*. [Internet] 2011;81(7) [acesso em 23 nov 2016]. Disponível: <http://dx.doi.org/10.1111/j.1746-1561.2011.00611.x>.
15. Kant AK, Graubard BI. 20-Year trends in dietary and meal behaviors were similar in U.S. children and adolescents of different race/ethnicity. *J Nutr*. [Internet] 2011;141(10) [acesso em 23 nov 2016]. Disponível: <http://dx.doi.org/10.3945/jn.111.144915>.
16. Chung AE, Perrin EM, Skinner AC. Accuracy of child and adolescent weight perceptions and their relationships to dieting and exercise behaviors: a NHANES study. *Acad Pediatr*. [Internet] 2013;13(4) [acesso em 23 nov 2016]. Disponível: <http://dx.doi.org/10.1016/j.acap.2013.04.011>.



17. Niu J, Seo DC, Lohrmann DK. Weight perception and dietary intake among Chinese youth, 2004-2009. *Int J Behav Med.* [Internet] 2014;21(4) [acesso em 23 nov 2016]. Disponível: <http://dx.doi.org/10.1007/s12529-013-9332-z>.
18. Affenito SG, Thompson D, Dorazio A, Albertson AM, Loew A, Holschuh NM. Ready-to-eat cereal consumption and the School Breakfast Program: relationship to nutrient intake and weight. *J Sch Health.* [Internet] 2013;83(1) [acesso em 23 nov 2016]. Disponível: <http://dx.doi.org/10.1111/j.1746-1561.2012.00744.x>.
19. Cavalcante AAM, Priore SE, Franceschini SCC. Estudos de consumo alimentar: aspectos metodológicos gerais e o seu emprego na avaliação de crianças e adolescentes. *Rev. Bras. Saude Mater. Infant.* [Internet] 2004;4(3) [acesso em 26 nov 2016]. Disponível: <http://dx.doi.org/10.1590/S1519-38292004000300002>.