ORIGINALES

Diet quality of nursing mothers using the Healthy Eating Index

Qualidade da dieta de nutrizes utilizando o Índice de Alimentação Saudável

Calidad de la dieta de las amamantadoras utilizando el Índice de Alimentación Saludable

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ABSTRACT:
Goal: To evaluate the overall diet quality of the nursing mothers using the Healthy Eating Index as an instrument.
Methods: We carried out a cross-sectional-observational-epidemiological study using as data collection instrument a semi-structured questionnaire to characterize the sample and the habitual intake reminder. The diet quality was evaluated through the Healthy Eating Index (HEI) validated to the Brazilian population. For the analysis, we estimated the means and standard deviations, the medians and interquartile ranges of the HEI total and of each component. We used the *Kolmogorov-Sminorv* test to verify the normality of the data. HEI total score averages by groups according to socio-demographic, nutritional and obstetric variables were assessed using Student's t-tests, ANOVA and Tukey's "post hoc" test.
Results: A total of 106 nursing mothers with a mean HEI score of 64.36 ± 10.68 were studied. Foods from the group of total fruit, whole fruit, total cereal, whole cereal and milk and dairy products were the

components of HEI of the nursing mothers with lower scores, and with a higher frequency of minimum score. It was possible to observe a low intake of total fruits, whole fruits, total cereals, whole cereal and milk and dairy products. Comparing the means and medians of the total HEI score with the demographic, socioeconomic, nutritional and obstetric variables of the nursing mothers, we observed that women with 12 or more years of completed study had a significantly higher mean in relation to the less educated mothers.

Keywords: Food intake; Healthy Eating Index; Maternal Nutrition; Nursing mothers

RESUMO:
Objetivo: Avaliar a qualidade global da dieta das nutrizes utilizando como instrumento o Índice de Alimentação Saudável.

Metodologia: Realizou-se um estudo epidemiológico observacional transversal, tendo como instrumentos de coleta dos dados, um questionário semiestruturado para caracterização da amostra e o recordatório de ingestão habitual. A qualidade da dieta foi avaliada por meio do Índice de Alimentação Saudável (IAS) validado para a população brasileira. Para as análises, foram estimadas as médias e desvios padrão, as medianas e intervalos interquartílicos do IAS total e de cada componente. Utilizou-se o teste de *Kolmogorov-Sminorv* para testar a normalidade dos dados. As médias de pontuação total do IAS por grupos de acordo com as variáveis sociodemográficas, nutricionais e obstétricas foram avaliadas utilizando os testes t de *Student*, ANOVA e Teste "post hoc" de *Tukey*.

Resultados: Foram estudadas 106 nutrizes com média de pontuação do IAS total de 64,36±10,68 e os alimentos do grupo das frutas total, fruta inteira, cereal total, cereal integral e leite e derivados, foram os componentes do IAS das nutrizes com menores pontuações, e com maior frequência de nota mínima. Foi possível observar um baixo consumo de frutas totais, frutas inteiras, cereais totais, cereais integrais e leite e derivados. Na comparação entre as médias e medianas da pontuação total do IAS com as variáveis demográficas, socioeconômicas, nutricionais e obstétricas das nutrizes, observou-se que mulheres com 12 ou mais anos de estudo completos tiveram média significativamente maior em relação às nutrizes com menor escolaridade.

Palavras chave: Consumo Alimentar; Índice de Alimentação Saudável; Nutrição Materna; Nutrizes.

RESUMEN:
Objetivo: Evaluar la calidad global de la dieta de las amamantadoras mediante el instrumento o Índice de Alimentación Saludable.

Metodología: Se realizó un estudio epidemiológico observacional transversal, teniendo como instrumentos de colecta de datos un cuestionario semiestructurado para la caracterización de la muestra y el registro de ingestión habitual. La calidad de la dieta ha sido evaluada por el Índice de Alimentación Saludable (IAS) validado para la población brasileña. Para los análisis, se estimaron las medias y desvíos estándar, las medianas e intervalos intercuartílicos del IAS total y de cada componente. Se utilizó el test de Kolmogorov-Sminorv para probar la normalidad de los datos. Las medias de puntuación total del IAS por grupos de acuerdo con las variables sociodemográficas, nutricionales y obstétricas se evaluaron utilizando los tests t de Student, ANOVA y Test "post hoc" de Tukey.

Resultados: Se evaluaron 106 amamantadoras con media de puntuación del IAS total de 64,36±10,68 y los alimentos del grupo de las frutas total, fruta entera, cereal total, cereal integral y leche y derivados, fueron los componentes del IAS de las amamantadoras con menores puntuaciones, y con mayor frecuencia de nota mínima. Fue posible ver un bajo consumo de frutas totales, frutas enteras, cereales totales, cereales integrales y leche y derivados. En la comparación entre las medias y medianas de la puntuación total del IAS con las variables demográficas, socioeconómicas, nutricionales y obstétricas de las amamantadoras, se observó que mujeres con 12 o más años de estudio completo han tenido media significativamente mayor en relación a las amamantadoras con menor escolaridad.

Palabras clave: Consumo Alimentario; Índice de Alimentación Saludable; Nutrición Materna; Amamantadoras.

INTRODUCTION

In recent years, Brazil has undergone a phase of demographic and epidemiological transformation, which challenges health authorities to create public policies that

promote better quality of life and empower the citizen[1], especially in relation to healthy eating, which is essential for the prevention and treatment of chronic no communicable diseases[2]. In this context, studies that evaluate the dietary habits and nutritional condition of the population have been decisive to guide programs and public policies for the promotion of health[3]. The pattern of food intake is the most important focus of a healthy eating[4].

Thus, it was necessary to adapt the indices of global diet quality, based on specific proposals for the Brazilian population, evaluating in a qualitative and quantitative way the usual diet. These indices need to be constantly reviewed and adapted to the new nutritional recommendations[5].

Faced with this situation, and considering the complexity of the diets, researchers have sought to develop and adapt instruments to evaluate the quality of the diet and incorporate in the analysis the correlation between food and nutrients, using parameters to identify deficiencies and nutritional excesses[6,7].

Brazil, however, undergoes a nutritional transition, where the occurrence of malnutrition has been reduced, and cases of overweight and obesity have increased significantly[8]. This change in the Brazilian epidemiological profile has favoured research with the intention of identifying factors associated with energy consumption and nutrient intake and the development of diseases[9]. However, standardized instruments such as adapted HEI in nursing mothers are scarce in the literature, and studies on food consumption in the postpartum period are rare. In Brazil, we found only one study by Tavares *et al*.[10], in order to assess the quality of nursing mothers diet using adapted HEI.

In this perspective, studies that address dietary patterns in nursing mothers are scarce. Even so, work on food consumption in nursing mothers is fundamental to estimate the food intake in this population, besides allowing the identification of vulnerability groups, so that nutritional public policies are implemented in order to modify the food behaviour and the lifestyle of these women, taking into account the promotion of health, especially in this important phase of the life for them.

Thus, this study's goal was to evaluate the overall diet quality of the nursing mothers using as an instrument the Healthy Eating Index adapted according to Previdelli *et al*.[6].

MATERIALS AND METHODS

A cross-sectional observational epidemiological study was carried out, with a sample of 106 nursing mothers, as well as with their new-borns. This is a sample of convenience chosen at random, whose recruitment was performed from prenatal care in the areas covered by the Family Health Strategy Units (FHS), located in the urban area of the town of Diamantina, Alto do Vale do Jequitinhonha, Minas Gerais, from August 2014 to December 2015.

The following exclusion criteria were adopted: prolonged hospitalizations that led to the suspension of breastfeeding; babies with congenital anomalies; mothers who stopped breastfeeding before the 15th day of the child's life; mothers with a diagnosis of diseases that indicated the need to stop breastfeeding. Participated in the study only those who signed the Term of Free and Informed Consent.

We collected the data from a questionnaire that addressed socio-demographic aspects (maternal age, self-reported skin colour and maternal education), economical aspects (total income and paid work), nutritional aspects (pre-gestational BMI and gestational BMI at the last prenatal visit) and obstetric history (gestational age and type of delivery). Pre-gestational BMI results were classified according to WHO[11] criteria in adults: low weight (<18.5); eutrophic (≥18.5 and <25), overweight (≥ 25.0 and <30) and obesity (≥ 30.0). For the classification of nutritional status during pregnancy in low weight, eutrophic, overweight and obesity were considered critical levels of body mass index (BMI) for gestational age, proposed by Atalah *et al.*[12] and adopted by the Ministry of Health[13].

Information regarding dietary intake was obtained by applying an ordinary intake reminder, which was based on a 24-hour recall where the questions referred to the usual intake at each meal. The data obtained in home measures were transformed into grams or millilitres, thus enabling a detailed nutritional analysis of food consumption. The analysis of the nursing mothers' ordinary diet nutritional composition was done using the software AVANUTRI[®] version 3.

For evaluating the overall quality of the diet, we used the HEI proposed by Guenther; Reedy; Krebs-Smith[14,15], and adapted by Previdelli *et al.*[6]. This index is composed of 12 components: 9 food groups ("Total Cereals", "Whole Cereal", "Meat, Eggs and Legumes", "Total Fruits", "Whole Fruits", "Total Vegetable"); 2 components based on nutrients ("Saturated Fat" and "Sodium"); and 1 component that corresponds to the sum of the energetic value from the intake of solid fats (saturated and trans), alcohol and added sugar ("Gord_AA")[6]. In the construction of the HEI, the ingested amounts of food obtained in the recall were evaluated, weighting them by the recommended portions for daily intake of the Food Guide for Brazilian Population[16], adjusted to 1000 kcal.

Foods that were not included in the food groups' portions list of the Food Guide for the Brazilian Population[16] were weighted in the food groups by the caloric value of the guide's portion. Foods that were composed predominantly of simple carbohydrates (ex: soft drinks, candies, sweets, jellies, etc.) were considered as the group of sugars and sweets.

For the HEI analysis, preparations with ingredients from different food groups (cakes, pasta with sauce, meat preparations) were broken down into ingredients and these were computed in each corresponding group. Similarly, for industrialized foods with ingredients from different food groups (cookies and sweets) were also dismembered, and their components are standardized according to label information[5,17].

In order to construct the HEI, each component of the index received a score, which is calculated based on the number of servings consumed per 1000 Kcal for the food groups; in mg/1000 Kcal for sodium; and proportion of the total energy consumption by the nutrient for saturated fat and solid fats, sugar and alcohol ("Gord_AA"). For the total HEI, the maximum score is 100 points. For the individual components, the minimum score was zero; and the maximum scores ranged around 5, 10 or 20, depending on the component[14,6]. The score for the intermediate values of intake, included in the interval between the criteria of minimum and maximum score, is assigned proportionally (Frame 1).

Frame 1 - Scores and portions distribution of Healthy Eating Index components. Diamantina, MG, 2015

HEI Component	Criteria for Score (Portions recommended by the Guide to 1000 calories)	Score
Total fruits[a]	0 ⟵⟶ ≥ 1.0 portion/1,000 kcal	0 – 5
Whole fruits[b]	0 ⟵⟶ ≥ 0.5 portion /1,000 kcal	0 – 5
Total vegetables[c]	0 ⟵⟶ ≥ 1.0 portion /1,000 kcal	0 – 5
Dark green and orange vegetables and legumes[c]	0 ⟵⟶ ≥ 0.5 portion /1,000 kcal	0 – 5
Total cereal	0 ⟵⟶ ≥ 2.0 portion /1,000 kcal	0 – 5
Whole cereal	0 ⟵⟶ ≥ 1.0 portion /1,000 kcal	0 – 5
Milk and dairy[d]	0 ⟵⟶ ≥ 1.5 portion /1,000 kcal	0 – 10
Meat, eggs and legumes	0 ⟵⟶ ≥ 1.0 portion /1,000 kcal	0 – 10
Oils[e]	0 ⟵⟶ ≥ 0.5 portion /1,000 kcal	0 – 10
Saturated fat	≥ 15 ⟵⟶ 16 ⟵⟶ ≤ 7% do VET	0 – 8 – 10
Sodium	≥ 2.0 ⟵⟶ 1.6 ⟵⟶ ≤ 0.7g/1,000 kcal	0 – 8 – 10
Gord_AA	≥ 35 ⟵⟶ ≤ 10% TEV	0 – 20*

[i]ncludes fruits and natural fruit juices; [e]xcludes fruit juices from juices; [i]ncludes legumes only after the maximum score of Meat, Eggs and Legumes is reached; [i]ncludes milk and soy based beverage derivatives; [e] Includes monounsaturated and polyunsaturated fats from oilseeds and fish fat; HEI: Diet Quality Index; Gord_AA: Calories from solid fat, alcohol and added sugar; * the average score of the Gord_AA were obtained by weighting the values between 34 and 11, were considered the values of 0 to 19.9;
TEV: Total Energy Value.
Adapted from PREVIDELLI et al.[6].

For the "Meat, Eggs and Legumes" component, the score was estimated from the sum of the energy value of the group "Meat and Eggs" and "Legumes". If there were surplus calories, the caloric value from the "Legumes" was computed in the groups "Dark green and Orange Vegetables and Legumes" and "Total Vegetables", simultaneously[6].

In relation to the total score, the closer to the maximum score, the better the quality of the diet. As the index was developed to reflect different aspects of the diet, there is no adequate and inadequate classification considering the total score, so the score of each component should be evaluated alone[14,15].

The database was typed and stored in Microsoft Office Excel 2007® and validated in EPI-INFO, version 6.04. Data analysis was performed in the *Statistical Package for Social Sciences* (SPSS) software version 20.0. For the analysis of this study, the means and standard deviations, the medians and interquartile ranges of the HEI total and of each component were estimated, as well as the percentage of the minimum and maximum scores of the components. The normality of the HEI values distribution among the categories of the interest variables was evaluated from the *Kolmogorov-Smirnov* test. The means of total HEI score by groups according to socio-demographic, nutritional and obstetric variables were assessed using *Student's* t tests, ANOVA and *Tukey's* "*post hoc*" test.[18].

Obeying the ethical precepts of resolution 466/2012, the study was submitted and approved by the Research Ethics Committee of the State University of Montes Claros with document nº 1,321,802.

RESULTS

The sample consisted of 106 nursing mothers, with a predominant age group between 20 and 29 years of age (48.1%), and black / brown skin colour (81.2%). Regarding education, 44.3% of the mothers studied from 9 to 11 years, 51% worked in paid work and 91.5% reported receiving up to 3 minimum wages.

Table 1 shows the means and medians, as well as their measures of dispersion of the values of the demographic, socioeconomic and nutritional characteristics of nursing mothers. The *Kolmogorov-Smirnov* test indicates that maternal age, BMI in gestation, energy, protein, carbohydrate and cholesterol intake, with p> 0.05 had normal distribution in the sample.

T**able 1 – Demographic, socioeconomic and nutritional characteristics of nursing mothers assisted in the public health system in Diamantina (MG), 2015**

	N	Means±SD	Min	Medians	Max	p*
Maternal age (years)	106	**26.24±6.65**	13.00	27.00	43.00	**0.25**
Maternal education (years)	104	10.03±2.54	3.00	11.00	14.00	0.00
Total income (R$)**	99	1756.39±3069.69	147.00	1200.00	30000.00	0.00
Pre-gestational BMI (kg/m^2)**	93	23.51±4.51	16.96	22.41	42.87	0.04
BMI in pregnancy (kg/m^2)**#	79	**27.88±4.83**	19.13	27.07	45.74	**0.41**
Energy intake (Kcal)	106	**1881.23±711.88**	735.73	1803.99	4122.78	**0.15**
Protein intake (g)	106	**80.83±34.51**	25.97	79.14	202.95	**0.56**
Carbohydrate intake (g)	106	**270.86±110.34**	72.49	251.80	594.89	**0.09**
Lipid intake (g)	106	57.57±38.65	12.86	51.58	244.57	0.03
Polyunsaturated lipid intake (g)	106	9.06±8.75	1.63	7.34	80.65	0.00
Monounsaturated lipid intake (g)	106	16.24±13.95	1.47	13.21	95.04	0.02
Saturated lipid intake (g)	106	21.09±18.39	1.40	17.39	114.52	0.01
Cholesterol Intake (mg)	106	**196.24±123.47**	0.00	183.02	936.96	**0.07**
Sodium intake (mg)	106	1623.75±1268.49	248.14	1260.05	9760.76	0.00

Calcium intake (mg)	106	484.71±453.77	**84.58**	387.06	3076.77	0.00
Iron intake (mg)	106	14.76±12.00	**5.19**	12.27	97.02	0.00
Intake of Vitamin A (RE)	106	921.87±2586.10	**0.00**	271.72	20392.37	0.00

Komogorov-Sminorv test– indicating that p> 0.05 the distribution is normal and the appropriate central tendency measure is the mean.
** Reduction of n due to lack of information on the pregnant woman's cards and omission of the interviewee. # BMI in the third trimester of gestation. SD = Standard Deviation.

The HEI mean score was 64.36 (SD = 10.68). The components that obtained the lowest mean and median scores, as well as the highest frequency of minimum scores were total fruits, whole fruits, total cereal, whole cereal, milk and dairy products. On the other hand, higher mean and median scores were observed for total vegetable intake, dark green and orange vegetables, meat, eggs and legumes, oil, saturated fat and sodium (Table 2).

Table 2 – Score of the Healthy Eating Index (HEI) components in nursing mothers (n = 106), Diamantina (MG), 2015

HEI Component	Reference Score	Mean± SD	Frequency n (%)	
			Minimum score	Maximum score
Total fruit	0 – 5	1.42±2.26	76 (71.7%)	30 (28.3%)
Whole fruit	0 – 5	2.03±2.47	63 (59.4%)	43 (40.6%)
Total vegetable*	**0 - 5**	**4.43±1.59**	**12 (11.3%)**	**94 (88.7%)**
Dark green and orange vegetable*	**0 – 5**	**4.06±1.97**	**20 (18.9%)**	**86 (81.1%)**
Total cereal	0 – 5	1.04±2.04	84 (79.2%)	22 (20.8%)
Whole cereal	0 – 5	0.05±0.49	105 (99.1%)	1 (0.9%)
Milk and dairy products	0 – 10	0.57±2.32	100 (94.3%)	6 (5.7%)
Meat, eggs and legumes	**0 – 10**	**9.72±1.67**	**3 (2.8%)**	**103 (97.2%)**
Oil	**0 - 10**	**9.91±0.97**	**1 (0.9%)**	**105 (99.1%)**
Saturated fat	**0-8-10**	**7.81±3.08**	**13 (12.3%)**	**42 (39.6%)**
Sodium	**0-8-10**	**8.53±2.14**	**5 (4.7%)**	**48 (45.3%)**
Gord_AA**	0 a 20	14.81±6.07	5 (4.7%)	41 (38.7%)
Total score***	0 a 100	**64.36±10.68**	-	-

* The legumes begin to compute in the total vegetable component and dark and orange vegetables component after reaching maximum score of the component meats, eggs and legumes. **Gord_AA: calories from solid fats, sugar and alcohol. ***Komogorov-Sminorv* test (p > 0.05) indicating that the distribution is normal and the appropriate central tendency measure is the mean. SD = Standard Deviation.

Table 3 presents a comparison between the means and medians of the total score of the Healthy Eating Index with the demographic, socioeconomic, nutritional and obstetric variables in nursing mothers. It was possible to observe that in the variable maternal education, the means between the groups were different (p <0.05), where it was possible to observe that women with 12 or more years of completed study had a significantly higher mean in relation to the mothers with less education. This indicates that nursing mothers' education may be a discriminatory variable for HEI scoring. Nursing mothers who worked and had higher income had higher scores, but did not present statistical significance.

Table 3 – Total score of the Healthy Eating Index and the demographic, socioeconomic, nutritional and obstetric variables in nursing mothers of Diamantina (MG), 2015

Demographic, socioeconomic, nutritional and obstetric characteristics	n (%)	HEI Total Score					P
		Mean	sd	Median	Min.	Max.	
Maternal age							
10 to 19 years of age	20 (18.9)	63.04	9.65	62.50	43.0	85.0	0.389*
20 to 29 years of age	51 (48.1)	63.48	10.58	64.00	42.6	88.0	
30 or more	35 (33.0)	66.38	11.33	68.00	35.0	80.0	
Self-reported skin colour							
Black/Brown	86 (81.2)	64.44	10.19	64.30	35.0	88.0	0.858**
White/Yellow	20 (18.8)	63.97	12.82	68.00	36.0	80.0	
Maternal education							
1 to 8 years	28 (24.6)	63.21	9.77	64.70	35.0	75.0	**0.016***
9 to 11 years	47 (44.3)	62.04	10.51	62.40	36.0	85.0	**0.014*****
12 years or more	31 (29.2)	68.89	10.60	70.20	42.0	88.0	**0.014*****
Total income							
Up to 3 wages	97 (91.5)	63.82	10.59	64.80	35.0	85.0	0.091**
more than 3 wages	9 (8.4)	70.11	10.37	72.80	58.0	88.0	
Paid work							
No	50 (48.5)	62.45	10.81	62.90	35.0	85.0	0.084**
Yes	53 (51.5)	66.13	10.59	68.00	36.0	88,.0	
Pre-gestational BMI							
Low weight	5 (5.4)	58.96	9.30	60.00	44.4	69.6	0.44*
Overweight	14 (15.1)	67.45	9.68	71.00	45.0	80.0	
Obesity	10 (10.8)	63.18	10.24	61.90	44.4	78.0	
Eutrophic	64 (68.8)	64.20	10.63	64.70	36.0	88.0	
BMI in the third quarter							
Low weight	13 (16.5)	62.93	10.21	64.00	43.0	78.0	0.813*
Ideal weight	37 (46.8)	62.65	10.47	62.60	42.0	78.0	
Overweight	19 (24.1)	65.49	11.78	63.60	36.0	88.0	
Obesity	10 (12.7)	64.68	13.57	68.00	35.0	80.0	
Gestational age at delivery							
Preterm	10 (9.4)	61.36	10.73	61.60	45.0	78.0	0.353**
At term	96 (90.6)	64.66	10.67	64.90	35.0	88.0	
Type of Delivery							
Caesarean	51 (48.1)	65.25	10.27	66.00	36.0	88.0	0.421*
Forceps	2 (1.9)	71.10	0.14	71.10	71.0	71.2	
Natural at home	53 (50.0)	63.23	11.17	64.00	35.0	83.0	

* Analysis of Variance – ANOVA; **Student's t test; *** *Tukey*'s test.

DISCUSSION

Quality feeding is an important predictor of health, as it acts both in prevention and in the treatment of diseases. During lactation, nutritional and energy needs are increased. In this sense, although well established in the literature, special attention should be given to determining factors of the diet quality of nursing mothers, in order to

prevent the occurrence of an unfavourable outcome and to provide adequate and good nutritional assistance in the postpartum period.

Regarding the results of this study, considering the reference scores for each HEI component, foods from the total fruit group, whole fruit, total cereal, whole cereal, milk and dairy products were the components of HEI of the nursing mothers with lower scores, and with a higher frequency of minimum grade. Similar results were reported in studies which showed that postpartum diets were limited in the variety of foods, with low fruit, cereal, milk and dairy products intake[19,20].

On the foods of the total vegetables group, dark green and orange vegetables, meat, eggs and legumes, oil and saturated fat, it was possible to observe a higher intake by the nursing mothers, thus increasing the consumption mean score of these foods. Regarding the consumption of proteins and saturated fat, the findings of the present study are in agreement with the study by Castro; Kac; Sichieri[19] performed with nursing mothers, who observed that the diet was richer in proteins and saturated fats. However, a study by Durham et al.[20], observed that in the postpartum period there was a low consumption of vegetables in the diet of the study population, results different from the findings of the present study. Fowles; Walke[21] also reported in their studies that the intake of vegetables by puerperal women is insufficient.

Postpartum is a phase permeated by actions that involve taking care of and preventing complications, especially in the care of food, since studies consider that a healthy diet is necessary to improve milk production[22]. According to the Food Guide for the Brazilian Population[23], healthy food must provide water, carbohydrates, proteins, lipids, vitamins, fibers and minerals, which are irreplaceable and indispensable to the proper functioning of the body.

Given this assumption, the diet should be varied, arranged in a colourful and harmonious way, since food ingested in a specific way, or isolated groups, are insufficient to provide all the nutrients necessary to maintain health[2]. During gestation and puerperium, women need to pay special attention to the quality of their diet, especially in relation to the choice of food, since maternal nutrition contributes to the development of the fetus during gestation, and after delivery during pregnancy lactation, as well as being a determinant of the quality of breast milk.[24,25].

The total score average of diet quality of the nursing mothers using as instrument of analysis the healthy eating index was low when compared to the reference score. In a study with women whose average age was 30 years, the education approximately 10 years and income per capita an average of a minimum wage, performed by Tavares et al.[13], a total score average of 72.3 was found, higher than the findings of this study. When comparing the means and medians of the total score of the Healthy Eating Index with the demographic, socioeconomic, nutritional and obstetric variables in nursing mothers, it was possible to observe that higher maternal education presented a higher HEI score average.

The increase in education in this study was favourable for improvement of the HEI total score. In studies carried out by Figueiredo; Jaime; Monteiro[26] and Levy et al.[27], with the increase of maternal education, also increases the consumption of fruits and vegetables. Molina et al.[28] affirms that mother's degree of education is a determinant factor for the selection and acquisition of healthier foods, and women with more years

of schooling have greater access to adequate information, distinguishing which foods are nutritionally adequate to make up the diet.

The HEI, as an instrument capable of analyzing various components of the diet, allows a qualitative evaluation of the diet, allowing to evaluate which food groups, foods or nutrients are being consumed by the nursing mothers, as well as if the quantity is adequate or not. Thus allowing a monitoring if the diet is within the nutritional recommendations of the Food Guide.

Regarding the limitations of this study, it was possible to highlight the results interpretation in a cross-sectional study with a convenience sample. Thus suggesting a longitudinal study that evaluates the causes and consequences of diet quality through primary care, promoting a better quality of life for this population.

CONCLUSION

Regarding HEI scores, the findings of the present study were smaller when compared to a study performed with Brazilian nursing mothers. It was possible to observe a low intake of total fruits, whole fruits, total cereal, whole cereal, milk and dairy products and higher intake of total vegetables, dark green and orange vegetables, meat, eggs and legumes, oil, saturated fat and sodium. In the comparison between the means and medians of the total HEI score with the demographic, socioeconomic, nutritional and obstetric variables of the nursing mothers, it was observed that women with 12 or more years of completed study had a significantly higher mean in relation to the mothers with less education. This indicates that nursing mothers' education may be a discriminatory variable for HEI scoring.

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