

# Nutritional status and diet quality of nursing mothers on exclusive breastfeeding

Estado nutricional e qualidade da dieta de nutrizes em amamentação exclusiva

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## Keywords

Breastfeeding; Maternal nutrition; Nursing; Nursing research; Obstetrical nursing

## Descritores

Aleitamento materno; Nutrição materna; Enfermagem; Pesquisa em enfermagem; Enfermagem obstétrica

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## Abstract

**Objective:** Identifying the nutritional status, dietary intake and diet quality of nursing mothers on exclusive breastfeeding.

**Methods:** Cross-sectional study carried out with nursing mothers on exclusive breastfeeding from day 28 postpartum. Standardized instruments were used, and body mass index, food consumption and diet quality were evaluated.

**Results:** The nursing mothers were overweight, presented energy consumption below the recommended and adequate percentage of macronutrients, except for protein, which was elevated. The diet was classified as "needs improvement" according to the Healthy Eating Index (HEI).

**Conclusion:** The results show that the overweight associated with a diet of poor quality indicated possible deficiencies of micronutrients.

## Resumo

**Objetivo:** Identificar o estado nutricional, o consumo alimentar e a qualidade da dieta de nutrizes em amamentação exclusiva.

**Métodos:** Estudo transversal realizado com nutrizes em aleitamento exclusivo a partir do 28º dia pós-parto. Foram utilizados instrumentos padronizados e foram avaliados o índice de massa corporal, consumo alimentar e qualidade da dieta.

**Resultados:** As nutrizes apresentaram sobrepeso, consumo energético abaixo do recomendado, porcentagens de macronutrientes adequadas exceto para proteína, que foi elevada. A dieta foi classificada como "precisando de melhorias", conforme o Índice de Alimentação Saudável.

**Conclusão:** Os resultados mostraram que o sobrepeso associado a uma qualidade inadequada da dieta, indicou possíveis carências de micronutrientes.

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## Introduction

The increase of obesity among the Brazilian female population in the late nineties led to an increase in the number of studies relating the postpartum period and breastfeeding with weight retention and, consequently, obesity in women.<sup>(1,2)</sup>

On the other hand, studies on food intake in the postpartum period using standardized instruments such as the 24-hour dietary recall and the Food Frequency Questionnaire (FFQ) could not be found in international databases. Nor were identified studies that used the Healthy Eating Index adapted to nursing mothers.

A thorough assessment of the condition of the breastfeeding mother contributes to the quality of nutritional counseling during the nursing period. The aim of this study is to determine the nutritional status, identifying food consumption and the quality of diet of women who are breastfeeding exclusively.

## Methods

A cross-sectional study with 75 nursing mothers and their children, attended at the breastfeeding outpatient clinic of the Universidade Federal de São Paulo. The inclusion criterion was to be breastfeeding exclusively from day 28 postpartum, a period considered suitable for the establishment of a dietary pattern.

In order to obtain maternal and children data an interview was conducted, and then followed by assessment of nutritional status, identification of food intake and diet quality.

Two standardized and validated instruments were used; a 24-hour dietary recall and a Food Frequency Questionnaire. The nutritional status was assessed using the body mass index, obtained by measurements of weight and height in a standardized manner.

The 24-hour dietary recall assesses the current diet and estimates the total energy value of the diet, as well as nutrients intake. The dietary recall was applied with the aid of a photographic record of servings, and food measurements to estimate consump-

tion on the day prior to the appointment.<sup>(3)</sup> Subsequently the total energy value of diet and intake of macronutrients (carbohydrates, proteins and lipids) were calculated, and then compared with the recommendations of DRIs – *Dietary Reference Intake*.<sup>(4)</sup> The calculations were performed by the Program of Support to Nutrition – *NutWin*® 2003.

The Food Frequency Questionnaire assesses the regular diet with qualitative, quantitative or semi-quantitative information on dietary pattern and food intake or specific nutrients. The validated instrument was used, featuring the usual diet on the month prior to the survey, assessing the consumption frequency of each food that comprised the list.<sup>(5)</sup>

The quality of diet was assessed using the Healthy Eating Index adapted in accordance to the recommendations of the Food Guide for the Brazilian Population and the Adapted Food Pyramid.<sup>(6-8)</sup>

For the analysis of data collected, the distribution of absolute and relative frequencies was made, as well as descriptive statistics, with measurements of central tendency and dispersion. For inferential statistics, according to the type of variable, the Pearson correlation coefficient was used, as well as the analysis of variance, with significance level of 95%. The statistical software used was JMP/SAS, version 8.02.

The study followed national and international standards of ethics in research involving human beings.

## Results

The results showed that the mean age of women was 30 years, that they had approximately 10 years of education and per capita income of one minimum wage on average. The majority lived with their partners (67%) and had two or more pregnancies (61.3%). About 80% of them were between the first and third month after delivery. Regarding characteristics of children, the proportion between genders was similar, with mean birth weight of 3,219 g and average length of 48.5 cm.

Regarding nutritional status, the average body mass index was 26.7 kg / m<sup>2</sup>, without statistically

significant differences related to income, maternal age and number of pregnancies ( $p > 0,05$ ) (Table 1).

**Table 1.** Food consumption and total energy value

Variables	Mean	Standard Deviation
Total energy value (TEV) (Kcal/day)	2233.6	866.7
Protein intake (g/day)	76.5	29.7
Protein (% of TEV)	13.7	4.5
Lipids (% of TEV)	30.0	7.0
Carbohydrates (% of TEV)	56.3	9.3

The energy value results indicated that the higher the age, the lower the energy consumption ( $p=0.0005$ ). Regarding income, there was correlation with the percentage of proteins, meaning that the higher the income the higher the protein percentage in the diet ( $p=0.0170$ ).

In table 2 we observe that the most frequently consumed foods were: industrialized juices, oranges/tangerines, onions, white bread, rice, milk, beans, tomatoes and bananas. Wine and beer intake was found in 17.3% of the mothers in the study, with an average consumption of 0.85 grams of alcohol per day.

## Discussion

The limits of the results of this study are related to the cross-sectional design, which does not allow es-

tablishing relations of cause and effect, but it suggests interesting associations for the object of study.

The practical implications are related to concomitant use of two standardized instruments for dietary assessment of nursing mothers, allowing proper nutrition monitoring during the breastfeeding period and contributing to the quality of care.

Regarding nutritional status, the results indicated that the nursing mothers were overweight, as expected.<sup>(9,10)</sup> Other authors have shown that lactating women were within the normal range or obese.<sup>(11-14)</sup>

However, the interpretation of the average body mass index obtained in the postpartum phase should be done with caution as there is no specific classification for nursing mothers. Thus, the values recommended for adult women are used as a parameter, which places the lactating mothers of the study in overweight situation.<sup>(2,15)</sup>

Regarding the results on food intake, the mean energy intake per day was 2,233 kcal. Two studies showed lower consumption values, of 1,800 and 2,107 kcal / day.<sup>(10,14)</sup> Other studies have identified similar values.<sup>(9,12,13)</sup> In this study and in others, the dietary intake was below the recommended for women of reproductive age that perform light physical activity, which is 2,200 kcal / day plus an extra 330 kcal / day for lactation.<sup>(3)</sup>

**Table 2.** Average consumption in portions, per day

Group	Average individual consumption (portions/day)	Pyramid recommendations (portions/day)	Consumption level	HEI score
Grains, Breads and Tubers	6.2	5 to 9	Within the recommended	10.0
Fruits	4.9	3 to 5	Within the recommended	10.0
Vegetables	1.4	4 to 5	Below the recommended	3.5
Meat and Eggs	5.0	1 to 2	Above the recommended	10.0
Legumes	1.9	1	Above the recommended	10.0
Milk and Dairy products	0.8	3	Below the recommended	2.8
Sugars and Sweets	4.3	1 to 2	Above the recommended	0*
Oils and fats	0.6	1 to 2	Below the recommended	6.0
Total fat %	25.5	≤ 30	Within the recommended	10.0
Variety	**	≥ 8 different items/day	Within the recommended	10.0
Mean HEI				72.3

Legend: \*For a consumption higher than the recommended by the Adapted Food Pyramid in the groups of 'sugar and sweets' and 'oils and fats', a zero score was given; \*\* All lactating mothers consumed more than eight different items/day listed on the FFQ, but these were not quantified

The results showed a population of overweight women, despite the energy intake being below the recommended level. This result leads us to question whether the use of standardized diet recommendations in nutritional care to nursing mothers may lead to a worsening in weight gain, therefore damaging the health condition even more.

In this study, the values found for macronutrients distribution in relation to total energy were considered appropriate, as well as in other studies.<sup>(4,9)</sup> In another study, the results presented on percentages of consumption of protein and lipids in relation to total energy value of the diet were above the recommended, 13.3% for protein and 34.1% for lipids.<sup>(11)</sup> In the evaluation of protein intake in grams/day, the result was slightly higher than the recommended, which is 71 grams / day. The same happened in another study that showed an average consumption of 86 grams/day.<sup>(4,12)</sup>

When the energy consumption was analyzed in relation to age, income and weight gain of the child, it was observed that the older the subject is, the lower the energy consumption. A similar result was found by another author, who evaluated the dietary intake of the adult population in a city in Southeastern Brazil, in accordance with socioeconomic and demographic profiles.<sup>(16)</sup> In the same way, a correlation was found for women with higher per capita income and protein intake, which is justified by the fact that a better economic condition favors access to protein foods that are more expensive than carbohydrates and lipids.

It was observed that among the most consumed foods by nursing mothers of this study, four of them were also cited in other works, as follows; milk, beans, rice and white bread, those last two are low cost foods with low nutritious content.<sup>(11,17,18)</sup> Other studies with the same population group showed that diets were limited in variety of foods, and that vegetables and fruits consumption was low.<sup>(11,14,19)</sup> Although consumption of alcoholic beverages is discouraged during lactation, an average alcohol intake of 0.85 grams/day was identified, a value smaller than the one found in another study, which was of 2.8 grams/day on average.<sup>(18,20)</sup>

Regarding the Healthy Eating Index, all nursing mothers had a diet classified as “needs improvement”. The HEI result of 72.3 on average is related to the low consumption of vegetables and foods of the milk and dairy products group, as well as to the high consumption of sugar and sweets. These data also indicate that the diet could be improved through guidance, specific programs and intervention. Other authors showed that among individuals evaluated based on the recommendations of the Food Guide for the Brazilian population and the Adapted Food Pyramid, 15% had a diet of ‘good quality’, 71% were classified as ‘needs improvement’ and 14% had a diet of ‘poor quality’, which is different than the results of this study.<sup>(6-8)</sup>

As the postpartum period is a time in which the lactating mother is adjusting to a new routine and has many tasks, among them caring for the child, self-care can be affected and consequently, nourishment too. It is believed that the choice of food is based on costs and ease of preparation, besides the already mentioned issue of access.

In this sense, the lactation period provides an excellent opportunity to perform actions of food and nutrition education, because in this phase women are more receptive and seek health services for monitoring their children. The results showed a worrying nutritional status of women that was expressed in anthropometric measurements. Probably, from the information on diet quality, it would indicate possible deficiencies of micronutrients, showing the need for guidance not only in quantitative aspects, but mainly in qualitative ones. It is essential that all staff providing assistance to women and children during this period is sensitized to this issue.

## Conclusion

In the assessment of nutritional status, women were considered to be overweight. The food consumption was considered below recommended. The consumption of proteins, lipids and carbohydrates was adequate according to the recommendations of the World Health Organization.

## Collaborations

Tavares MP participated in the conception, design, analysis and interpretation of data. Devincenzi UM and Sachs A collaborated by reviewing it critically for important intellectual content. Abrão ACFV collaborated with the conception, design, analysis and interpretation of data and final approval of the version to be published.

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