Intake of Ultra-Processed Foods by Women Surviving Breast Cancer

Consumo de Alimentos Ultraprocessados por Mulheres Sobreviventes do Câncer de Mama

Consumo de Alimentos Ultra Procesados por Mujeres Supervivientes del Cáncer de Mama

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ABSTRACT

Introduction: High prevalence of breast cancer in Brazil along with the increase in intake of ultra-processed foods suggests a narrow relation between these two factors. **Objective:** To evaluate the intake of ultra-processed foods in women surviving breast cancer. **Method:** Cross-sectional study with 100 women with breast cancer followed at an oncology treatment center. Based in a food frequency questionnaire, food items ingested were grouped in *in natura*, processed and ultra-processed, according to NOVA classification. The energetic contribution of each food group was given by the ratio between calories from the group and total calory. Patients were categorized in high and low intake of ultra-processed and the differences between the two groups (categorical variables) were tested by Pearson's X^2 test. The relationship between calories intake from ultra-processed foods and the intake of energy and specific nutrients was based in linear regression models adjusted per age, education and body mass index. **Results:** Of the calories ingested by the patients, 27.1% were ultra-processed foods. Those with high ingestion of ultra-processed foods had lower intake of protein (p=0.0372) and fibers (p=0.0458) and higher intake of polyunsaturated fat (p=0.0019) and sodium (p=0.0068). The ingestion of ultra-processed foods was related to lower intake of *in natura* foods and higher intake of sodium, total fat and its fractions (p<0.05). **Conclusion:** Women who survived breast cancer had one third of their diet formed by ultra-processed foods associated with reduced intake of *in natura*, proteins and fibers.

Key words: Food Consumption; Industrialized Foods; Food Quality; Breast Neoplasms; Survivorship.

RESUMO

Introdução: A elevada prevalência de câncer de mama no Brasil em paralelo ao aumento no consumo de alimentos ultraprocessados sugere relação estreita entre esses fatores. **Objetivo:** Avaliar o consumo de alimentos ultraprocessados em mulheres sobreviventes do câncer de mama. **Método:** Estudo transversal com 100 mulheres com câncer de mama acompanhadas em centro de tratamento oncológico. Utilizando um questionário de frequência alimentar, os itens alimentares consumidos foram agrupados em *in natura*, processados e ultraprocessados, conforme classificação NOVA. A contribuição energética de cada grupo de alimento deu-se pela razão entre caloria proveniente do grupo e caloria total. As pacientes foram categorizadas em elevado e baixo consumo de ultraprocessados e as diferenças entre os dois grupos (variáveis categóricas) foram testadas por X^2 de Pearson. A relação entre a ingestão de calorias provenientes de ultraprocessados e a ingestão de energia e de nutrientes específicos foi baseada em modelos de regressão linear brutos e ajustados por idade, escolaridade e índice de massa corporal. **Resultados:** Das calorias ingeridas pelas pacientes, 27,1% eram de ultraprocessados. As com alto consumo de ultraprocessados tinham menor ingestão de proteínas (p=0,0372) e fibras (p=0,0458) e maior de gordura poli-insaturada (p=0,0019) e sódio (p=0,0068). O consumo de ultraprocessados implicou em menor ingestão de *in natura* e maior de sódio, gordura total e de suas frações (p<0,05). **Conclusão:** Mulheres sobreviventes do câncer de mama têm um terço da sua alimentação composto por ultraprocessados associados à redução no consumo de *in natura*, proteínas e fibras.

Palavras-chave: Consumo de Alimentos; Alimentos Industrializados; Qualidade dos Alimentos; Neoplasias da Mama; Sobrevivência.

RESUMEN

Introducción: La elevada prevalencia de cáncer de mama en Brasil ha aumentado junto con el aumento del consumo de alimentos ultraprocesados**. Objetivo:** Evaluar el consumo de alimentos ultraprocesados de mujeres supervivientes del cáncer de mama. **Método:** Estudio transversal con 100 mujeres con cáncer de mama asistidas en un centro de tratamiento oncológico. Utilizando un cuestionario de frecuencia alimentaria, se ha dividido los ítems consumidos en naturales, procesados y ultraprocesados según la clasificación NOVA. La contribución energética de cada grupo de alimento se dio por la división entre la caloría del grupo y la total. Se ha categorizado a las pacientes en alto y bajo consumo de ultraprocesados y se ha testado las diferencias entre los dos grupos mediante la prueba de chi-cuadrado. Se ha basado en modelos de regresión lineal ajustados por edad, educación e índice de masa corporal para la relación entre la ingesta de calorías de los alimentos ultraprocesados y de energía y nutrientes específicos **Resultados:** De las calorías ingeridas por las pacientes, 27,1% fueran de ultraprocesados. Las de alto consumo de ultraprocesados tenían menos ingesta de proteínas (p=0,0372) y fibras (p=0,0458) y mayor ingesta de grasa poli-insaturada (p=0,0019) y sodio (p=0,0068). El consumo de ultraprocesados ha llevado a menos ingesta de alimentos naturales y mayor ingesta de sodio, de grasa total y de sus fracciones (p<0,05). **Conclusión:** Las mujeres supervivientes del cáncer de mama tuvieron un tercio de su alimentación formado por ultraprocesados asociados a la disminución del consumo de alimentos naturales, proteínas y fibras.

Palabras-clave: Consumo de Alímentos; Alimentos Industrializados; Calidad de los Alimentos; Neoplasias de la Mama; Supervivencia.

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INTRODUCTION

Ultra-processed consumption has been widely investigated in its relationship with obesity and other chronic diseases[1]. The third report of the World Cancer Research Fund (WCRF)[2] establishes the consumption of ultra-processed food as strong evidence for risk of colon cancer. Despite the evidences of this relation are not sufficient for breast cancer[3,4], a recent meta-analysis indicates that the increase of ultra-processed consumption is associated to the growth of risk of breast cancer[5].

The association between ultra-processed and breast cancer can be explained indirectly by the fact that these food have high energetic density and low nutritional value[6], contributing for the obesity and excess of adipose tissue[7], presented as risk factors for the disease[8]. In addition, the ultra-processed have components that favor the carcinogenesis process[9] or food additives that serve as carcinogenic disruptors because of the exposure since puberty[10].

Beyond the risk of developing the disease, the high prevalence of breast cancer survivors with more than 6.8 million women in the world[11] encourages the care with feeding because it is a modifiable risk factor[12] and contributes to minimize the disease relapse, in special, the late relapse that happens five to twenty years after the diagnosis[13]. In this context, the National Cancer Institute José Alencar Gomes da Silva (INCA) expresses its concern with obesity and inappropriate nourishment of the Brazilian population in the last decades and the necessity of mitigating this epidemic to prevent new cases of the disease[14].

The present study, based in the justification, verified the consumption of food according to the extension and purpose of its processing among breast cancer women survivors to identify how ultra-processed food contribute for this and its associations with specific nutrients intake.

METHOD

Cross-sectional study with women survivors[15] of breast cancer (n=100), treated at the Oncology Integrated Regional Center, a reference of oncologic treatment in the city of Fortaleza – CE in the Brazilian Northeast. The participants older than 20 years selected consecutively and non-probabilistically had no previous history of other neoplasm, were not in chemotherapy treatment and had not receive nutritional orientation.

Trained investigators collected the data in direct interview and charts review. Demographic information (age, years of education, marital status, month income in minimum wages), clinical staging, anthropometric measures [current weight (CW-Kg), height (m) and waist circumference (WC-cm)] and food consumption were collected.

CW and height were measured in platform scale Plenna® with maximum capacity of 150 kg and accuracy of 0.1 kg with coupled stadiometer with precision of 0.1 cm. For CW, the patients were wearing light clothes and barefoot; for height, the Frankfurt position was adopted[16]. Based in these parameters, the Body Mass Index (BMI) was calculated (weight/height²) for nutritional diagnosis according to WHO – World Health Organization classification[17] for adult women and of Lipschitz[18] for older adults.

WC was measured with flexible metric and inelastic tape with precision of 0.1 cm in the middle point between the iliac crest and the last rib[19], the cutoff value was ≥88cm[19,20], indicative of elevated risk of cardiometabolic diseases.

The quantitative food frequency questionnaire (QFFQ)[21], validated for the Brazilian Northeast women with 68 food items was applied by trained interviewer. Photos and kits with household meters (plates, cups, glassed and cutlery) typical of the region were used to estimate the number of portions consumed. It was assigned score 1 for once a day consumption frequency and proportional scores for other frequency responses. Therefore, the frequency of consumption for each one of the food items included in the QFFQ was transformed in daily frequency. Next, it was calculated the daily intake of each patient in grams or milliliters and later in calories, macronutrients (carbohydrate, protein, lipid, saturated fat, poly and monounsaturated fat, cholesterol, fiber) and micronutrient (sodium), utilizing the Brazilian Food Composition Table (BFCT), the USDA Nutrient Database for Standard Reference and the Nutritional Composition of Food Consumed in Brazil of the Brazilian Institute of Geography and Statistic (IBGE).

Each item of the QFFQ was characterized according to the extension and purpose of the processing it was submitted to, considering the classification NOVA proposed by Monteiro et al.[22], being categorized in one of the following groups: foods *in natura* or minimally processed and processed culinary ingredients, processed and ultra-processed food. Next, the calories originated from each group were estimated for each participant, adding the relative intake of energy of each item of the QFFQ according to its classification. The mean of percent contribution of each food group, according to the type of processing in the total caloric intake was estimated from the calculation of the mean of the division (calory originated from the food group/total calory) of each individual.

Women were categorized in elevated and low consumption of ultra-processed, considering the percentile 75 and 25 of calories from ultra-processed food, respectively. The Pearson chi-square test was used to test the differences of the frequencies of the categorical variables among the two groups.

To evaluate the relation between intake of calories from ultra-processed and the intake of energy (food and sugary food) and specific nutrients (protein, lipids, saturated fat, monounsaturated, polyunsaturated, fiber and sodium), models of linear regression were used, and the calories from ultra-processed are the independent variable. The consumption of ultra-processed was adjusted by the total intake of energy, utilizing the method of residuals[23] and since it presented asymmetrical distribution, this variable underwent logarithmic transformation. After adjustment by energy, the exponential of the value adjusted was calculated to facilitate the interpretation of the data. The models were further adjusted by age, education and BMI.

Sugary food consist of sweet cookie without filling, sweet cookie with filling, sugar added to milk, yogurt with fruits, milkshake or milkshake with fruits, orange juice, natural juice of other fruits, coffee with sugar, chocolate, filled chocolate and chocolate truffles, fruit candies, cakes and pies, ice cream and non-diet or diet soft drinks.

All the statistical analyzes were conducted in software SAS, version 9.4, significance of 5%.

The Institutional Review Board of the University of Fortaleza (UNIFOR) approved the study through report number 204/10; data collection was initiated after the patients signed the Informed Consent Form.

RESULTS

The patients had mean age of 50.9 (SD=10.2) years, 53% were in the age-range ≥50 years and 10% were older adults. Most had spouse (61.2%), completed elementary school (71.6%), earned mean month income lower than four minimum wages (63%; R$ 622.00 - U$311.74) and in more advanced clinical staging (III and IV) (73.9%) (Table 1).

The mean BMI of the participants was 28.8 kg/m² (standard deviation - SD=4.5) and 32% were obese. The mean of WC was 98.6 cm (SD=177.6) and 86.5% of the patients were at elevated risk of cardiometabolic disease (WC≥88 cm). The groups showed similar sociodemographic, clinical and anthropometric profiles in intake of ultra-processed (Table 1).

The mean intake of the study participants was 2,278.5 kcal (SD=862.5), of which 27.1% from ultra-processed food, mostly breads, cookies with filling, sweet cookies, salty crackers and sausages. Food in natura represented 69.81% of the calories ingested, the most part from meats and eggs (13.56%), followed by fruits (9.30%) and milk (6.76%) (Table 2).

Table 3 shows the intake of macronutrients (carbohydrate, protein and fat), fibers and sodium according to higher or lower interquartile of consumption of ultra-processed where the patients who ingest ultra-processed, intake less proteins and fibers and high intake of polyunsaturated fat and sodium.

Table 4 shows the relation between the consumption of ultra-processed and the intake of energy and specific nutrients where it is observed that the consumption of ultra-processed food implies in reduction of the intake of calories from food in natura and the increase of total fat and its fractions (p<0.05). The intake of sodium also increases with high consumption of ultra-processed food (p<0.05). These relations were independent from age, education and BMI of the women.

DISCUSSION

The present study investigated food consumption of women survivors of breast cancer according to the extension and purpose of processing and shows that nearly one third of the calories ingested by them results from ultra-processed food and that, as high the ingestion, lower is the consumption of food in natura, proteins and fibers and high is the consumption of total fat, its fractions and sodium.

The consumption of ultra-processed is worrying because of its impact in excessive weight gain and development of non-communicable chronic diseases for favoring high intake of calories and sugar addiction[1,7]. The findings of this study strengthen the necessity of a special look towards this food habit among women survivals of breast cancer since the biggest consumption of calories contributes for weight increase and onset of obesity; the higher consumption of sugared food holds direct relation with high glycemic index and burden, glycemia increase, hyperinsulinemia and metabolic cascades that favor carcinogenesis.

In Brazilian patients survivors of breast cancer, a recent study of Alves et al.[3] showed that 14% of the calories ingested by these women were originated from ultra-processed food; however, this consumption did not hold association with nutritional status. In these findings, the consumption of ultra-processed of the women survivals of breast cancer is higher and responds for 27.1% of the total calories ingested and is similar to what was found for the Brazilian population in 2017 (21.5%)[24]. This synergy of results indicates that after breast cancer diagnosis the patients do not shift their food consumptions to healthier

Table 1. Sample size, sociodemographic, nutritional and clinical characteristics according to the intake of ultra-processed food. Fortaleza, Ceará, Brazil

Variable	N	%	Low intake of ultra-processed	High intake of ultra-processed	p-value
Age (n=100)					
<50 years	47	56.0	52.0	60.0	0.572
≥50 years	53	44.0	48.0	40.0	
Marital status (n=98)					
Without spouse	38	38.8	40.0	24.0	0.715
With spouse	60	61.2	60.0	76.0	
Education (n=95)					
Elementary school	68	71.6	80.0	72.0	0.822
High school and university	27	28.4	20.0	28.0	
Income (n=92)					
<4 minimum wages	58	63.0	58.3	63.6	0.946
≥4 minimum wages	34	37.0	41.7	36.4	
Nutritional status (n=100)					
Eutrophy	20	20.0	28.0	12.0	0.100
Overweight	48	48.0	36.0	44.0	
Obesity	32	32.0	36.0	44.0	
Cardiometabolic Risk (n=96)					
Low/Moderate	14	14.6	8.0	4.0	0.936
High	82	85.4	92.0	96.0	
Clinical staging (n=91)					
CS1	26	26.1	21.7	22.7	0.702
CS2	65	73.9	78.3	77.3	

Captions: Low intake: Intake of ultra-processed food <p25; High intake: Intake of ultra-processed food ≥p75; Age: cut-off of the National Cancer Institute José Alencar Gomes da Silva (INCA, 2020). Without spouse: widow, divorced, single. Nutritional Status – classification for adults – Eutrophy: BMI 18.5 kg/m² – 24.9 kg/m²; Overweight: BMI 25.0 kg/m² – 29.9 kg/m²; BMI≥30.0 kg/m²; Classification for older adults – Eutrophy: BMI>22 – ≤27 kg/m²; Overweight: BMI>27 kg/m². Low/moderate cardiometabolic risk: WC<88cm; High cardiometabolic risk: WC≥88cm. CS1: Clinical Staging 0, I and II; CS2: Clinical Staging III and IV.

pattern despite being in a favorable condition for these changes[25,26].

Proper nourishment has been proposed by WCRF[2] as recommendation for survivors patients and indicated as modifiable aspect to prevent disease relapse. However, proper nutritional orientation and follow up since diagnosis is needed to create this quality of food consumption in women survivals of breast cancer[26,27]. In relation to extension and purpose of foods processing, Alves et al.[3] raised an important discussion about the necessity of a cutoff indicating there is safe consumption of ultra-processed. The authors highlight that this fragility of inexistence of a cutoff hampers the associations between the consumption of ultra-processed and breast cancer and creation of food orientations for the population.

Despite not having the cutoff, these findings show that the biggest consumption of ultra-processed was associated to reduction of ingestion of *in natura*. Foods *in natura* involve meat, eggs and greens[22] and those of vegetal origin

have protective characteristics as the presence of antioxidant vitamins, fibers and other bioactive compounds[28,29] against the carcinogenesis process. Women with breast cancer that have a healthy diet, rich in greens and legumes have low risk of relapse and death by the disease[30]. Among the patients of this study, fruits responded for only 9.3% of the calories ingested and greens not even appear as food choices. An additional problem of this finding is that women with high consumption of ultra-processed ingest low fibers since fibers ensure to manage weight and glycemia, both related to promotion of carcinogenesis.

Another finding deserving attention is the increase of consumption of total fat and its fractions as high is the consumption of ultra-processed. It is known that metabolites related to butter, margarine and desserts consumption, sources of saturated fat, collaborate for breast cancer[31,32] etiology.

In addition to the investigation about the consumption of vegetables and fat in these patients, lower ingestion of

Table 2. Mean absolute and relative consumption according to calories/day, extension and purpose of food processing

Extension and purpose of food processing	Kcal/day	% of the intake in total energy	Extension and purpose of food processing	Kcal/day	% of the intake in total energy
Food *in natura* or minimally processed and culinary ingredients	1,590.7	69.8	Salty meat	7.7	0.3
			Beverages[b]	4.6	0.2
Meats and eggs[a]	308.9	13.6	**Ultra-processed food**	617.5	27.1
Fruits	211.9	9.3	Bread	196.9	8.6
Milk	154.0	6.8	Cookies[c]	76.5	3.4
Rice	179.7	7.9	Sausages	57.4	2.5
Olive oil	99.9	4.4	Ice-cream	42.4	1.9
Milk-based shake	87.7	3.8	Cake	41.2	1.8
Beans and peas	81.8	3.6	Sugar-added Yogurt	29.8	1.3
Coffee	84.8	3.7	Creamy cheese	28.0	1.2
Fruit juice	72.1	3.2	Soft drinks	25.1	1.1
Couscous	69.0	3.0	Margarine	24.7	1.1
Potato and cassava	61.6	2.7	Lasagna	23.9	1.1
Flour	50.0	2.2	Pastry	22.2	1.0
Oat	41.5	1.8	Pizza	14.5	0.6
Greens and legumes	29.7	1.3	French fries	11.3	0.5
Soups	27.3	1.2	Chocolates, filled chocolates	10.2	0.4
Sugar	20.6	0.9	Mayonnaise salad	7.9	0.3
Butter	10.0	0.4	Mayonnaise	3.9	0.2
Processed food	70.3	3.1	Sweetener	1.1	0.0
Preserved fruits	36.8	1.6	Ketchup	0.5	0.0
Cheese	13.1	0.6	**Total**	2,278.5	100.0
Canned corn and peas	8.0	0.3			

Captions: [a]Includes fried and poached fish, pork, poultry and viscera; [b]Includes beer and wine; c: Includes cookies with filling, candies and appetizers.

Table 3. Mean intake of nutrients according to the consumption of ultra-processed

Nutrient	Total	Low consumption of ultra-processed	High consumption of ultra-processed	p
	Mean	Mean	Mean	
Carbohydrate (g)	322.1	322.1	317.8	0.749
Protein (g)	84.4	90.5	80.5	0.037
Lipid (g)	60.1	56.7	62.4	0.185
Saturated fat (g)	20.0	19.5	20.6	0.525
Unsaturated fat (g)	18.8	16.8	18.9	0.141
Polyunsaturated fat (g)	9.3	8.3	11.0	0.002
Fiber (g)	31.5	35.5	30.8	0.045
Sodium (mg)	1.707.4	1.478.1	1.874.1	0.007

Captions: Low intake: intake of ultra-processed food <p25; High intake: intake of ultra-processed food ≥p75; Difference of means per t-Student. Significance p<0.05.

Table 4. Coefficient of linear regression (β) of the relation between the consumption of ultra-processed and intake of energy and specific nutrients

	β [a]	P	β [b]	p	β [c]	P
Food *in natura*, Kcal*	-0.794	**0.008**	-0.835	**0.005**	-0.800	**0.008**
Sugary food, Kcal	-0.426	0.054	-0.459	**0.044**	-0.404	0.080
Proteins, %TEV*	0.022	0.273	0.022	0.253	0.031	0.111
Fats, %TEV	0.039	**0.039**	0.039	**0.047**	0.045	**0.021**
Saturated fat, %TEV	0.011	0.123	0.011	0.133	0.014	**0.047**
Monounsaturated, %TEV	0.016	**0.041**	0.014	0.076	0.016	**0.039**
Polyunsaturated fat, %TEV	0.018	**<0.0001**	0.018	**<0.0001**	0.019	**<0.0001**
Fiber, g*	-0.006	0.408	-0.007	0.282	-0.007	0.318
Sodium, mg*	0.905	0.077	0.890	0.083	108.78	**0.035**

Captions: Linear regression: [a]Raw model; [b]Adjusted model per age and education; [c] Adjusted per age, education and BMI: Body Mass Index. *Kcal: Kilocalories, TEV: Total energy value, g: Grams, mg: milligrams.

proteins in women with high consumption of ultra-processed was found. The consumption of proteins in patients survivals of breast cancer is an important strategy to maintain a proper body composition and minimizes the development of sarcopenic obesity knowingly involved in less disease-free survival of breast cancer[33]. The results of this study do not address the association among nutritional diagnosis and consumption of ultra-processed, but show elevated prevalence of weight excess and WC, that hold association with risk of cancer or worsening of the patient's clinical status.

The results presented herein indicate that women survivals of cancer have a consumption profile of ultra-processed food rich in starch and white flour followed by processed meat, sugared products and fats. According to Fiolet et al.[5], among the most consumed ultra-processed are the sugared products, followed by beverages and food rich in starch and morning cereals. In Brazil, ultra-processed food most present in national nourishment (cold cuts, sausages, sweet cookies and crackers, margarine, sweet cakes and pies, breads, candies in general, sweetened carbonated beverages and chocolate) match with what was found in this study[24].

It was verified for the consumption of sugary food (bread, cookies, ice cream, cakes and soft drinks) that 16.7% of the total calories ingested by the patients were originated from this type of food. According to WHO[34], at the most, 10% of the daily calories should result from the intake of sugar and the WCRF[2] recommends limiting as much as possible this consumption. Moubarac et al.[35] found that ultra-processed beverages (including carbonated drinks, fruit juices and fruit beverages) and sweetened ultra-processed food (candies, cookies, cakes, desserts, dairy products) represent nearly 20% of the daily consumption of calories of Canadians, similar value to what was found in this study.

Luiten et al.[36] noticed a positive correlation between the extension and the purpose of the industrial processing with the classification of the nutrients, concluding that ultra-processed food has worse nutritional profile among all the groups analyzed. Based in this, it is unquestionable the recommendation of the Food Guide to remove this food from the daily life of the population for better food choice and prevention of non-communicable chronic diseases. The WCRF[2] also recommends to limit as much as possible the consumption of ultra-processed for cancer prevention and its relapse. A 10% elevation in the proportion of consumption of ultra-processed in the diet is related to significant increases in total cancer risk (12%) and in the risk of breast cancer (11%)[5].

Despite this study not being of follow up and not presenting the relation of causality between the consumption of ultra-processed and the development of breast cancer, it is affirmed the relevance of the results for indicating that, even after the breast cancer diagnosis, the consumption of ultra-processed remains high. In addition, the relation of this consumption with other nutrients involved with the promotion and protection of carcinogenesis calls attention for the necessity of development of specific strategies for the group of women survivors of breast cancer. Another positive aspect of this study is the sample exclusively with patients survivors of cancer, the population for which the food studies are scarce. Still, it is emphasized as strong point the contribution of these findings for the development of clinical trials to follow up patients survivors of breast cancer, in addition to favoring discussions about public policies targeted to oncologic patients in the different categories of survivors[37].

CONCLUSION

Patients survivors of breast cancer have nearly one third of their energy intake originated from ultra-processed food and the consumption of these food implies in reduction of

the consumption of food *in natura* and increase of intake of total fat and sodium. This type of food consumption can contribute for obesity, risk factor for disease relapse. These findings indicate the necessity of improving the food consumption of women survivors of breast cancer in order to ensure the maintenance of healthy weight and minimize the risk of relapse as consequence.

CONTRIBUTIONS

Julianne do Nascimento Sales contributed for the conception and/or study planning, collection, analysis and interpretation of the data and wording. Manuella Cunha Barbosa contributed for the conception and/or study planning, collection, analysis and interpretation of the data. Ilana Nogueira Bezerra contributed for the analysis and interpretation of the data and critical review. Sara Maria Moreira Lima Verde contributed for the conception and/or planning of the study, interpretation of the data, wording and critical review. All the authors approved the final version to be published.

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DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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