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Eating behavior in postpartum black women with obesity

Comportamento alimentar em mulheres negras puérperas com obesidade

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ABSTRACT

This work aims to describe the eating behavior of postpartum black women with obesity. This is a cross-sectional study, in which 82 black women with obesity in the postpartum period were included. The sociodemographic, gestational, anthropometric characteristics and eating behavior of postpartum women were evaluated. Eating behavior was assessed using the Dutch Eating Behavior Questionnaire. Principal components analysis was used to highlight the three dimensions of the Dutch Eating Behavior Questionnaire (i.e., emotional, restrictive and external), considering factor loading >0.4 and <-0.4 . The analyzes were carried out using SPSS 22.0 software. The average age of the women was 29 years (± 5.7) and the current Body Mass Index diagnosed Grade 2 Obesity (33.8 ± 3.85). More than 70% of volunteers carried out 7 consultations or more during prenatal care. The eating behavior with the highest average score was external eating behavior (30 ± 5.7), followed by emotional eating behavior (26 ± 6.8) and restrictive eating behavior (22 ± 3.1). Postpartum black women with obesity presented three dimensions of eating behavior, in which external eating behavior was more prominent among those investigated.

Keywords: Postpartum. Obesity. Eating behavior.

RESUMO

Este trabalho busca descrever o comportamento alimentar de mulheres negras puérperas com obesidade. Trata-se de um estudo transversal, em que foram incluídas 82 mulheres negras com obesidade no puerpério. Foram avaliadas as características sociodemográficas, gestacionais, antropométricas e o comportamento alimentar das puérperas. O comportamento alimentar foi avaliado através do Questionário Holandês de Comportamento Alimentar. Empregou-se análise de componentes principais para evidenciar as três dimensões do Questionário Holandês de Comportamento Alimentar (i.e., emocional, restritivo e





externo), considerando carga fatorial $>0,4$ e $<- 0,4$. As análises foram realizadas no software SPSS 22.0. A média de idade das mulheres foi de 29 anos ($\pm 5,7$) e o Índice de Massa Corporal atual diagnosticou Obesidade Grau 2 ($33,8 \pm 3,85$). Mais de 70% das voluntárias realizaram 7 consultas ou mais durante o pré-natal. O comportamento alimentar com maior pontuação média foi o comportamento alimentar externo ($30 \pm 5,7$), seguido do comportamento alimentar emocional ($26 \pm 6,8$) e comportamento alimentar restritivo ($22 \pm 3,1$). Mulheres negras puérperas com obesidade apresentaram três dimensões de comportamento alimentar, em que o comportamento alimentar externo apresentou maior sobressalência entre as investigadas.

Palavras-chave: Puerpério. Obesidade. Comportamento alimentar.

Introduction

In Brazil, 26% of the adult population is obese (IBGE, 2019). It is estimated that 40% of women begin pregnancy with a body mass index (BMI) above the normal range, and 47% exceed the recommended weight gain (GOLDSTEIN et al., 2017). These factors are associated with an increased risk of adverse health outcomes for the mother and infant (FARPOUR-LAMBERT et al., 2018; ROMANO et al., 2010). Lifestyle behaviors, such as dietary habits, play a pivotal role in the prevention of health issues in women (LOMBARD et al., 2009).

Eating behavior is defined as a set of methods, reactions, and/or ways of proceeding in relation to food (how, with what, with whom, where, and when one eats) (ALVARENGA; PHILIPPI, 2011). Eating behavior is influenced by various psychological, emotional, religious, environmental, subjective, and social factors (VIANA; SINDE, 2003). One significant social aspect that warrants consideration is racism. In particular, structural racism, which is perpetuated by institutions, history, and ideologies, represents a pervasive form of systematic oppression, violence, and exclusion directed towards marginalized racial and ethnic groups (Bailey et al., 2017; Skolarus et al., 2020). Racism presents a pervasive and persistent challenge throughout the lifespan of Black individuals, exposing them to a multitude of stressors and traumatic experiences that can manifest in adverse biological outcomes (Krieger, 2012). Recent evidence indicates that experiences such as racism are negatively associated with the eating behavior of Black women. However, there is a paucity of knowledge regarding the eating behavior of Black women with obesity during the puerperal period (EXUM; TEMPLIN; FAZZINO, 2022; VARTANIAN; PORTER, 2016).

Eating behavior is operationalized in behavioral phenotypes (e.g., emotional, restrictive, and external behavior) that aim to predict which individuals are more susceptible



to dysfunctional behaviors (HWANG et al., 2020). Given that racist experiences are a significant risk factor for dysfunctional eating behavior, which in turn plays a pivotal role in the maintenance of obesity in the puerperal period, it is of paramount importance to describe the eating behavior of puerperal black women with obesity to identify those at greater risk of adverse long-term outcomes. Therefore, the aim of this study was to describe the eating behavior of obese black women who have recently given birth.

1 Methodology

This study is a cross-sectional analysis of the baseline data from the randomized clinical trial entitled "Strategy for the management of excess weight in primary health care" (Brazilian Registry of Clinical Trials (ReBEC): 5vnnqnk). The study was approved by the research ethics committee of the Ceará State University under protocol number 38311920.6.0000.5534, and all participants consented to take part in the study. The sample size calculation for the clinical trial assumed a BMI difference of 1.2 kg/m², with a standard deviation of 2.5 kg/m. This was based on a 90% power and a significance level of 0.05%. This resulted in a total sample size of 148 women. To account for 70% compliance and an additional 20% loss to follow-up, the total sample size was estimated at 206 women.

Inclusion criteria included age between 18 and 45, absence of pre-existing chronic disease (cancer, hypertension, or diabetes), obesity diagnosis, and late puerperium period (i.e., within the first 12 months postpartum) (ROMANO et al., 2010). Volunteers with eating disorders and pregnant women were excluded. Between October 2021 and October 2022, the volunteers were recruited in person while awaiting puerperium appointments at five health units situated in a major regional capital in the northeast. A total of 491 women were invited to participate in the study, 310 of whom declined. In this study, only women who identified as Black or Brown (n=82) were considered, in accordance with the IBGE classification system (IBGE, 2022). Sociodemographic variables were collected, including marital status, race/color, per capita family income, and level of education. Anthropometric variables, such as weight and height, were also recorded. Gestational variables, such as type of delivery, time postpartum, and prenatal care, were also documented. Finally, eating behavior was assessed.

Body weight was measured using a Filizola® digital scale with a capacity of 200kg and a sensitivity of 100g. The participants' height was measured using a Filizola® stadiometer, which was attached to the scale with a capacity of 2.10 m and a sensitivity of 1.0 mm. The



Body Mass Index (BMI) was calculated as the ratio between body weight and the square of height. According to the World Health Organization (WHO, 1998), values between 25 and 30 kg/m² were classified as overweight, while values equal to or greater than 30 kg/m² were classified as obese. To reduce measurement error, all anthropometric measurements were taken in duplicate, and the volunteers wore minimal clothing at the time of collection. In the event of a discrepancy greater than 1 cm, the measurement was repeated.

The Dutch Eating Behavior Questionnaire (DQHA) (WARDLE, 1987; ALMEIDA; LOUREIRO; SANTOS, 2001) was employed to assess eating behavior. The questionnaire comprises 33 items, arranged on a 5-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = very often). The CSF encompasses three domains of eating behavior: food restriction (10 items), external intake (10 items), and emotional intake (13 items). Food restriction refers to the subject's regular efforts to control their appetite and food intake, which may include engaging in diets. External intake encompasses intake motivated by external factors intrinsic to the food or the social situation in which it is eaten. Emotional intake is determined by emotional stress factors, implying disinhibition to eat in this situation (VIANA; SINDE, 2003). The score for each subscale is obtained by averaging the responses. The subscale with the highest score indicates the most frequently practiced eating style. Therefore, the predominant eating behavior is known from a high score in one of the domains, which indicates a tendency to react to food (attitude) according to this behavior. Additionally, the higher the total score, the lower the ability to control eating (VIANA; SINDE, 2003).

The data were assessed for normality using the Kolmogorov-Smirnov test. The data were presented as the mean and standard deviation for numerical variables and absolute and relative frequencies (percentages) for categorical variables.

An exploratory factor analysis was employed to derive the dimensions of eating behavior. Initially, the correlation matrix was constructed to ascertain whether the variables were correlated with each other. This was done by applying the Kaiser-Meyer-Olkin (KMO) index and Bartlett's test of sphericity. Values of KMO > 0.50 and $p < 0.05$, respectively, were considered acceptable. The number of factors to be retained was determined by the scree test, which evaluated the values situated before the inflection point. This number was then determined by eigenvalues > 1.0.

The principal component analysis (PCA) was employed to extract the factors, which were then orthogonally transformed using the Varimax rotation method. This was done in



order to facilitate interpretation by obtaining a structure with independence of the factors. Items with factor loadings greater than or equal to 0.40 or less than or equal to -0.40 were retained in the factors (dimensions of eating behavior). All analyses were conducted using the SPSS software, version 22.0.

2 Results

A total of 82 volunteers participated in the study, with an average age of 29 years (standard deviation ± 5.7) and a current BMI diagnosed as grade 2 obesity (33.8 ± 3.85). Table 1 presents the sociodemographic characteristics of the volunteers.

Table 1. Demographic characteristics of the participants. Fortaleza, 2024.

Variables	N	(%)
Marital status		
Single	25	(30.4)
Married/Consensual union	55	(67)
Others	2	(2.4)
Education		
< 8 years of study	19	(23.1)
8 to 11 years of study	53	(64.6)
> 11 years of study	10	(12.1)
Family income		
< 1 Minimum wage ¹	19	(23.2)
1-2 Minimum wages	55	(67.1)
> 2 Minimum wages	8	(9.8)

Source: prepared by the authors. Values expressed as absolute (n) and relative (%) frequencies.

¹Minimum wage of R\$1,100.00.

Of the volunteers, 26 (32.9%) were in their first pregnancy, and 66 (83.5%) were breastfeeding. Table 2 presents the gestational characteristics of the volunteers.



Table 2. Gestational characteristics of the volunteers. Fortaleza, 2024.

Variables	N	(%)
Type of delivery		
Vaginal	19	(23.8)
Elective caesarean section	28	(35)
Emergency caesarean section	32	(40)
Unknown	1	(1.3)
Prenatal consultations		
1 to 3 appointments	1	(1.3)
4 to 6 appointments	19	(23.8)
7 or more appointments	59	(73.8)
None	1	(1.3)
Postpartum time		
Up to 1 month	26	(33.8)
2 to 3 months	13	(16.9)
4 to 6 months	14	(18.2)
> 6 months	24	(31.2)

Source: prepared by the authors. Values expressed as absolute (n) and relative (%) frequencies.

Three dimensions of eating behavior were identified: emotional, restrictive, and external. The eating behavior with the highest mean score was external eating behavior (30 ± 5.7), followed by emotional eating behavior (26 ± 6.8) and restrictive eating behavior (22 ± 3.1). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.69, and the Bartlett test of sphericity was statistically significant ($p < 0.001$), indicating that the data were suitable for principal component analysis. The three patterns collectively explained 48.6% of the total variance. Table 3 presents the eating behaviors derived from the principal component analysis.



Table 3. Dimensions of eating behavior obtained by principal component analysis. Fortaleza, 2024.

Variance components	Emotional compulsion	Restrictive compulsion	External compulsion
Explained variance (%)	27.6	12.6	9.0
Cumulative variance (%)	27.6	39.7	48.6
Variables			
1. Do you feel like eating when you are angry?	0.79		
3. Do you feel the urge to eat when you have nothing to do?			
5. Do you crave food when you feel depressed or discouraged?	0.75		
8. Do you crave food when you feel lonely?	0.69		
10. Do you feel like eating when someone upsets you?	0.77		
13. Do you feel like eating when you are angry?	0.88		
16. Do you feel the urge to eat when something unpleasant seems about to happen?	0.69		
20. Do you crave food when you feel anxious, worried, or tense?	0.84		
23. Do you feel the urge to eat when things are not going well?	0.83		
25. Do you crave food when you feel impatient?	0.85		
28. Do you feel like eating when you are upset?	0.90		
30. Do you crave food when you feel frightened?	0.70		
32. Do you crave food when you feel disappointed or let down?	0.80		



4. If your weight increases, do you eat less than usual?		0.55	
7. Do you refuse food or drink because you're worried about your weight?		0.54	
11. During meals, do you try to eat less than you'd like to?		0.43	
14. Do you strictly control what you eat?			
17. Do you deliberately eat foods that are not very "fattening"?		0.49	
19. When you eat too much one day, do you try to eat less the next day?		0.58	
22. Do you eat less on purpose to avoid gaining weight?		0.82	
26. Do you avoid eating between meals to control your weight?		0.82	
29. Do you try not to eat out because you are controlling your weight?		0.63	
31. Do you take your weight into account when choosing what to eat?		0.67	
2. If the food looks appetizing, do you eat more than usual?			
6. If the food smells good or looks good, do you eat more than usual?			
9. If you see or smell something very tasty, do you want to eat it?			0.57
12. If you have something very tasty to eat, do you eat it right away?			0.61
15. When you pass a bakery, do you feel like buying something tasty?			0.66
18. If you see someone eating, do you also feel the desire to eat?			0.62



21. Can you stop eating very appetizing food?			
24. When you pass a bakery or snack bar, do you feel the urge to eat something tasty?			0.68
27. Do you eat more than usual when you see someone else eating?			0.40
33. When you prepare a meal, do you feel the urge to have a snack?			0.68

Source: prepared by the authors. Factor load ≥ 0.40 or ≤ -0.40 .

3 Discussion

In analyzing the eating behaviors of obese black postpartum women, three dimensions of eating behaviors were identified: emotional, restrictive, and external. Of the three dimensions identified, the women scored highest on the external dimension of eating, followed by the emotional dimension and the restrictive dimension.

Commensal eating-or the practice of eating in a group-is commonly reported in the Black community (BIGGS; HAAPALA, 2021), and meals are often shared among family members or friends (MIDDLETON et al., 2023). Commensal eating is associated with increased caloric intake and eating outside the home as the availability of food becomes greater and more present in the environment (SCANDER; WIKLUND; YNGVE, 2021). This may be the hypothesis behind the higher score for external eating behavior in the sample studied.

There is some evidence that women tend to respond more strongly to stress by altering their food intake because of the social rules about food consumption imposed on them (STEWART; MARTIN; WILLIAMSON, 2022). Gender and racial oppression can be "cumulative," placing black women in a worse social position (ALMEIDA, 2019). This is compounded by the postpartum period, when women need a larger support network, which can be neglected for black women given the "strong woman" stereotype (ASHLEY, 2014). Emotional eating is often used as a strategy to cope with stress (BILICI et al., 2020).

Women under high stress choose more caloric foods compared to less stressed women, demonstrating that stress causes changes in eating behavior (MIKOLAJCZYK; ANSARI; MAXWELL, 2009). This may be one of the possible explanations for the greater adherence to emotional eating behaviors among postpartum women.



The high level of concern about health and weight leads women to restrict their consumption of higher calorie foods under normal circumstances, but under stress, control over this consumption decreases and they allow themselves to eat what they used to avoid (ZELLNER et al., 2006). However, the literature shows controversial associations between restrictive eating behaviors in black women (HOWARD et al., 2017). One possible explanation for this is a greater acceptance of body size among blacks, which may not have a major impact on the relationship with restrictive eating (EXUM; TEMPLIN; FAZZINO, 2022).

In stressful situations involving social life, emotional factors tend to influence food choices, as does the difficulty of controlling the amount eaten (DE QUEIROZ et al., 2022). Studies investigating the causal relationship between eating disorders and racism in sensitive periods of life, such as the puerperium, are essential. Mothers' eating behaviors can shape their children's eating behaviors, especially in the puerperium, as babies are initially passive to the act of eating (BROWN, 2014; TAVERAS et al., 2004). Therefore, it is important to ensure that women have the support they need to manage eating disorders in the puerperium, as this is a milestone that influences the development and maintenance of healthy eating habits (KEBBE et al., 2022).

Although racism was not assessed in this study, the detrimental, unjust, and vivid consequences for Black people in our society are undeniable, especially for Black women in the postpartum period (CREAR-PERRY et al., 2021; SKOLARUS et al., 2020). Black women are twice as likely as white women to experience severe morbidity before, during, and after childbirth (JEFFERS et al., 2023). Thus, some authors have coined the term "obstetric racism" to refer to the disparities that place black women at greater risk (DAVIS, 2019; WILLIAMSON, 2021).

This reinforces the critical need to implement public policies aimed at protecting maternal health and dismantling racist structures.

Despite the interesting findings, some limitations of the study need to be considered. Our sample was selected for convenience, so caution is needed when extrapolating these results. In our study, principal component analysis was used in the scoring of the HCAF to find the dimensions of eating behavior, which helped to more reliably identify the most representative type of behavior in each participant. The psychosocial aspects involved in the act of eating are as important as the consumption itself, especially during a critical intergenerational period such as the puerperium. They should therefore be included in public policies, especially in this socially neglected population.



Final considerations

Three eating phenotypes were described in black postpartum women with obesity. There was greater adherence to external eating behaviors, followed by emotional eating behaviors and restrictive eating behaviors. These findings are important because eating behaviors in the puerperium are associated with good maternal and infant health. In addition, the puerperium is a critical period for establishing good eating habits for future generations.

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