

THE IMPORTANCE OF NUTRITION FOR THE PREVENTION OF FACTORS METABOLIC METHODS ASSOCIATED WITH OBESITY IN ADULTS

Raimundo Peixoto Marques¹; Náira Paes de Moura²

¹ - Student of the Nutrition course at Centro Universitário Maurício de Nassau - UNINASSAU ² - Professor of the Nutrition course, Master at Centro Universitário Maurício de Nassau - UNINASSAU

rpm1.peixoto@outlook.com

SUMMARY

Introduction: Nutrition plays a crucial role in preventing and controlling obesity and associated metabolic factors. **Goal:** The objective of this bibliographical research is to highlight the importance of nutrition in preventing metabolic factors associated with obesity in adults. **Method:** This is an Integrative Literature Review (RIL), with a qualitative approach, which aims to describe the importance of nutrition in preventing metabolic factors associated with obesity in adults. The research will be carried out using the PubMed, SciELO and Google Scholar databases. The keywords for the search, obtained from the Health Sciences Descriptors (DeCS), will include “nutrition”, “prevention”, “metabolic factors”, “obesity” and “adults”. **Results:** Analysis of the studies suggests that obesity is a complex condition that requires a multidisciplinary and personalized approach for its effective management and highlights the importance of considering dietary patterns and comprehensive health care in controlling obesity. The analysis also highlights the need to consider regional and global particularities in the management of obesity. **Conclusion:** Nutrition plays a very important role in controlling obesity. Through different effective dietary strategies, there is always the possibility of improving metabolic health and preventing obesity in adults.

Words-key: Nutrition. Obesity. Metabolism. Adults. Healthy diet.

ABSTRACT

Introduction: Nutrition plays a crucial role in preventing and controlling obesity and associated metabolic factors. **Objective:** The objective of this bibliographical research is to highlight the importance of nutrition in preventing metabolic factors associated with obesity in adults. **Method:** This is an Integrative Literature Review (RIL), with a qualitative approach, which aims to describe the importance of nutrition in preventing metabolic factors associated with obesity in adults. The research will be carried out using the PubMed, SciELO and Google Scholar databases. The keywords for the search, obtained from the Health Sciences Descriptors (DeCS), will include “nutrition”, “prevention”, “metabolic factors”, “obesity” and “adults”. **Results:** Analysis of the studies suggests that obesity is a complex condition that requires a multidisciplinary and personalized approach for its effective management and highlights the importance of considering dietary patterns and comprehensive health care in controlling obesity. The analysis also highlights the need to consider regional and global particularities in the management of obesity. **Conclusion:** Nutrition plays a very important role in controlling obesity. Through different effective dietary strategies, there is always the possibility of improving metabolic health and preventing obesity in adults.

Keywords: Nutrition. Obesity. Metabolism. Adults. Diet, Healthy.

1. INTRODUCTION

Obesity is a health condition that affects millions of people around the world and is associated with a range of metabolic problems, including type 2 diabetes, cardiovascular disease and hypertension. The prevalence of obesity has increased alarmingly in recent decades, becoming a public health issue of great importance (Santos; Conde, 2020).

According to Rodrigues (2023), obesity is a condition that has become increasingly prevalent over time, largely due to changes in lifestyle and diet. Currently, obesity is characterized by the abnormal or excessive accumulation of body fat, which leads to weight gain and causes harm to health. Poor diet is one of the main risk factors for disease and death in the world. Between 2006 and 2019, data from ABESO (2022) showed a higher prevalence of excess weight among Brazilians (from 42.6% to 55.4%), of obesity (from 11.8% to 20.3%).

On the other hand, nutrition as a field of study and practice began to gain prominence in Brazil in the 1930s, with the creation of courses to train dietitians (Vasconcelos; Calado, 2011). Hippocrates, twenty-five centuries ago, already recognized the importance of the balance between the consumption of food that provides fuel for the body (energy consumption) and physical activity (energy expenditure) for health (Brazil, 2020). Thus, the importance of nutrition in preventing obesity and associated metabolic diseases stands out (Santos, 2020).

Nutrition plays a crucial role in preventing and controlling obesity and associated metabolic factors. A balanced and nutritious diet according to Silva (2021) can help maintain a healthy weight, improve insulin sensitivity, control blood sugar levels and reduce the risk of cardiovascular diseases.

The prevalence of obesity has increased alarmingly, making it a public health issue of great importance. However, preventing obesity is a significant challenge due to the complexity of the factors involved. Furthermore, obesity is not just an individual problem, but also has significant social and economic implications, including higher healthcare costs and lost productivity (Wharton *et al.*, 2020).

According to Silva (2021), intervention to prevent obesity must be multifaceted and address the various factors that contribute to this condition. This may include promoting a healthy, balanced diet, promoting regular physical activity, education about the importance of nutrition and health, and support for making healthy lifestyle choices.

The social importance of this topic is addressed by Frohlich *et al.* (2019), in which they mention that obesity and associated metabolic diseases, such as type 2 diabetes and cardiovascular diseases, have a significant impact on the quality of life of women.

people and can lead to a range of health complications. What's more, obesity has economic implications, including higher healthcare costs and lost productivity. Therefore, preventing obesity through nutrition is an issue of great social relevance.

Academically, this topic is important because it contributes to understanding the relationship between nutrition and metabolic health. Research in this field can provide valuable insights into how diet and lifestyle can influence the risk of obesity and associated metabolic diseases. Furthermore, it can inform the development of effective nutritional interventions for the prevention and treatment of obesity. Therefore, research on this topic has the potential to contribute significantly to the academic literature on nutrition and public health.

The general objective of this bibliographic research is to describe the importance of nutrition in preventing metabolic factors associated with obesity in adults.

2 MATERIALS AND METHODS

This study is an Integrative Literature Review (RIL), with a qualitative approach, which aims to report the importance of nutrition in preventing metabolic factors associated with obesity in adults. Every investigation must have its delimitations previously defined, therefore, given the need to meet the intentions presented in this project, we opted for this type of research of an exploratory nature, as it involves a bibliographical survey for greater depth on the topic and to make the surveys transparent. about the questions raised (Almeida, 2021).

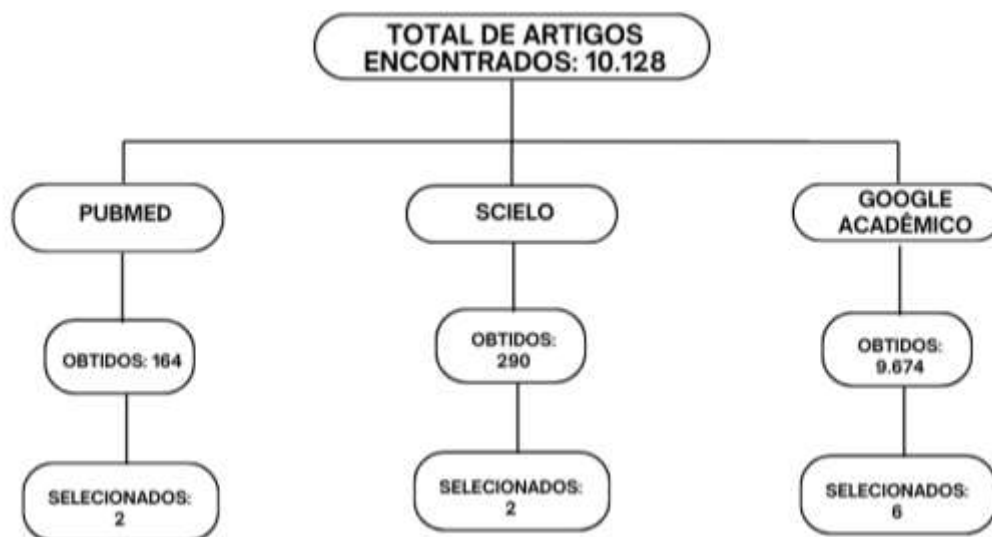
The research was carried out using the PubMed, SciELO and Google Scholar databases. The keywords for the search, obtained from the Health Sciences Descriptors (DeCS), will include “nutrition”, “prevention”, “metabolic factors”, “obesity” and “adults”.

The period covered by the studies extended from 2018 to 2024, taking into account only original articles published in English and Portuguese. After the initial search, the articles of greatest relevance to the research topic were selected.

The inclusion criteria were articles that address the relationship between nutrition and obesity in adults, while the exclusion criteria were articles that were not original or that were not within the defined coverage period. Next,

Figure 1 is shown, which illustrates the number of articles selected for the study, according to the databases.

Figure 1: Distribution of references obtained in the 3 databases used to carry out the study study.



Source: Author (2024)

Data from selected articles were analyzed qualitatively, focusing on identifying common themes and differences between studies. The approach also sought to identify gaps in the existing literature and suggest directions for future research.

Regarding ethical aspects, all articles included in the review were cited appropriately to ensure recognition of the authors' original work. Furthermore, the review was conducted impartially, without prejudice or preconceptions, to ensure the validity and reliability of the results. The research did not involve the collection of primary data, therefore, there were no issues of informed consent or participant privacy. It was concerned with ensuring the copyright of all authors cited here, using the aforementioned authors for citations and references, in accordance with the standards of the Brazilian Association of Technical Standards (ABNT), not committing plagiarism, which according to Almeida (2021) is characterized by the appropriation or expropriation of intellectual rights.

4

3 RESULTS

Seeking to describe the importance of nutrition in preventing metabolic factors associated with obesity in adults, the results were presented

in the form of a table and description of the main findings in order to optimize the visualization of the data analysis.

Table 1, below, explains the results obtained in the filtering process carried out. The selected material, which was discussed, allowed us to compare what the scientific literature has to report specifically about obesity in adults in Brazil.

Table 1: Literature used to support the study

Author/Year	goal	Result
Villarreal, VI H. (2018)	The objective of this study was to evaluate the prevalence and factors associated with abdominal obesity in adults aged 20 to 59 years in the state in Pernambuco, Northeast from Brazil.	It was evident that 80.7% (IC = 78.1-83.1) of women had abdominal obesity, whereas among men it was 37.7% (CI 33.4-42.1) (p = 0.000) . After the analysis adjusted by Poisson regression, they remained independently associated with abdominal obesity: age over 30 and formal work in males. For women, age over 40 years, education with less than 4 years of studies and being in the climacteric remained associated. Food consumption and physical activity were not associated with abdominal obesity.
Frohlech, C. <i>et al.</i> (2019)	aimed to identify dietary patterns and their association with obesity abdominal in women shift workers in southern Brazil.	The presence of abdominal obesity was verified by measuring waist circumference ≥ 88 centimeters and dietary patterns were obtained through analysis of the main components of 53 items. The patterns were classified based on foods with the highest factor loading and nutritional characteristics. Thus, three eating patterns were identified among shift workers and there was an improvement in the diet of those with abdominal obesity, representing a possible change in eating habits after its occurrence.
Swinburn, B. A. <i>et al.</i> (2019)	This one report from the Commission Lancet examine the growing prevalence global of obesity within a broad context in drivers social It is common politicians for	These three pandemics - obesity, malnutrition and climate change - represent the Global Syndrome that affects the majority of people in all countries and regions of the world. They constitute a syndrome, or synergy of epidemics, because they occur together in time and place, they interact with each other to

5

	malnutrition climate changes.	to produce share common underlying principles;
Wharton <i>et al.</i> (2020)	The main objective is to improve results patient-centered healthcare rather than just focusing on weight loss	People living with obesity should have access to evidence-based interventions, including medical nutritional therapy, physical activity, psychological interventions, pharmacotherapy, and surgery. Obesity is defined as a BMI greater than 30 kg/m ² and is subclassified into class 1 (30–34.9), class 2 (35–39.9) and class 3 (≥ 40).
Santos, IKS; Conde, W.L. (2020)	Describe and analyze the trend of patterns eating habits practiced by the adult population aged 18 to 44 from Brazilian capitals between 2007 and 2012.	They were identified four standards food in the population: prudent, transitional, western and traditional. There was a tendency for the average score of the standards: prudent, western and traditional to increase, and a reduction in the average score for the transition standard. Greater adherence to the prudent standard among more educated individuals. Greater adherence to Western and traditional standards among less educated individuals.
Silva, R.O. (2021)	The study aimed to describe strategies in approach and actions aimed at people with obesity and identify the main outcomes of practices offered per nutritionists who work in primary health care in the state of Paraíba.	The most prevalent practices were offered to the individual (99.3%), followed by the community (66%) and group (48.1%). A variety of approaches and actions are offered within the scope of health promotion, prevention of comorbidities and management of obesity Abeso (2022). Control of comorbidities was considered by nutritionists as the main (16.1%) outcome of practices.
ABESO (2022)	It aims to discuss the main scientific evidence that can contribute with the health professional's conduct in the nutritional treatment of obesity and reinforce the relevance of following an appropriate diet, what promote calorie deficit, be sustainable in long term and that contributes to the	One of the limitations observed in herbal medicines is the presence of metals above safety levels. A study evaluated the metal content in extracts from plants prescribed as weight loss supplements, including <i>Camellia sinensis</i> , <i>Cordia ecalyculata</i> and others. The most frequently detected metals were manganese, aluminum and iron, with higher concentrations in <i>Camellia sinensis</i> ³⁵ . To date, there is no clinical evidence that

	health promotion overall of the individual.	can recommend the supplements described here for weight loss.
Melo, FCT (2022)	Identify O profile management and forms of intersectoral articulation related to the area of food hand carried out in Attention Primary Health and verify its association with the prevalence of obesity in the three health macroregions from the state of Paraíba.	All macro-regions had an average obesity rate in adults higher than the national reference for people over 18 years of age described in the National Health Plan 2020-2023. The presence of a technician responsible for food and nutrition actions was associated with higher rates of obesity. Carrying out food and nutrition education actions, and intersectoral practices related to the Food and Nutrition Security sector were associated with lower prevalence of obesity.
Melo, L.B. et al. (2023)	This one article he has O objective of relating dietary patterns inadequate and their food groups, which can induce and worsen obesity through the release of substances pro-inflammatory.	Many studies link dietary patterns and the risk of developing diseases. Healthier eating patterns result in the continuous consumption of food groups that contain nutrients that are associated with a lower risk of obesity and other NCDs, such as those with a high consumption of fruits, vegetables, olive oil, fish, moderate consumption of alcohol and low sugar consumption. Therefore, nutrients associated with these patterns do not induce and even protect the release of inflammatory substances that worsen the physiological and metabolic state of overweight and obese people.
Rodrigues, A. PS (2023)	The objective of this Module is to develop Skills of professionals in health of Primary Health Care (PHC) for the organization of care comprehensive and clinical management of people with overweight and obesity. These are conditions complex chronicles and multifactorial, being a	Actions aimed at organizing comprehensive care for overweight and obese people, as well as the clinical management of these conditions, are carried out from a multidisciplinary work perspective. Respectful approaches are used that avoid blaming the individual. As these are complex and multifactorial conditions, in addition to multidisciplinary action, intra and intersectoral coordination is also important to carry out more effective health promotion actions,

	<p>challenge for you health systems. In particular, in APS, we realize that these grievances they are recognized.</p>	<p>prevention and control of overweight and obesity, following the principles and guidelines of PHC and sharing care with other levels of care, when necessary.</p>
--	---------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------

Source: Author (2024)

4 DISCUSSION

The results obtained in this research are aligned with the proposed objectives, seeking to investigate the importance of nutrition in preventing metabolic factors associated with obesity in adults. The findings reinforce the need for personalized approaches, which take into account the particularities of each individual.

Obesity according to Menezes *et al.* (2020) is a multifactorial condition that affects millions of people around the world, with significant implications for public health. This study sought to better understand nutritional interventions and their effects on obesity management, using an integrated approach that considers hormonal, inflammatory and behavioral aspects.

The Wharton study *et al.* (2020), in accordance with the research by Braga and Costa (2021) which presents the Canadian clinical practice guidelines for obesity in adults, is in accordance with the Frolech study *et al.* (2019), which analyzes abdominal obesity and eating patterns in female shift workers. Both studies highlight the importance of an adequate nutritional approach in controlling obesity.

Thus, the agreement between the Wharton studies *et al.* (2020) and Frolech *et al.* (2019) in relation to the importance of nutrition in controlling obesity. The Wharton study *et al.* (2020), which provides Canadian guidelines, offers a set of practical recommendations for managing obesity in adults, while the Frolech study *et al.* (2019), focused on female shift workers, can bring *insights* about how eating patterns and lifestyle can influence abdominal obesity.

8

This agreement reinforces the idea brought by Correia, Santos and Camolas (2021) in which they also emphasize, regardless of the target audience or geographic context, nutrition plays a crucial role in controlling obesity. This highlights the need for personalized nutritional intervention strategies and

contextualized, taking into account the particularities of each individual and population group. Furthermore, the mention of abdominal obesity in the Frolech study *et al.* (2019), also found in the literature of Biagio, Moreira and Amaral (2020), suggests the importance of focusing not only on total body weight, but also on the distribution of body fat, which is a significant risk factor for several health conditions .

Thus, this analysis reinforces what has already been seen in other studies, such as Castilho *et al.* (2021) in which they raise the relevance of nutrition in the management of obesity and the need for personalized and contextualized approaches. Also, studies such as that by Soweck, Carletto and Muller (2021) highlight the importance of considering different aspects of obesity, such as the distribution of body fat.

However, the Melo study (2022) brings a new perspective by analyzing the impact of dietary patterns on overweight and obesity from a hormonal and inflammatory perspective. This suggests that in addition to dietary practices, other biological factors may play a crucial role in weight regulation.

Still, the studies Rodrigues (2023), Santos and Conde (2020) and Swinburn *et al.* (2019) corroborate the idea that comprehensive health care and the analysis of dietary patterns are fundamental in the management of obesity. The Rodrigues study (2023) emphasizes the need for comprehensive health care for overweight and obese people, while the Santos and Conde study (2020) analyzes the trend in eating patterns among adults in Brazilian capitals. In turn, the Swinburn study *et al.* (2019) presents a global view of obesity, malnutrition and climate change, reinforcing the need for an integrated approach to address these interconnected challenges.

Thus, Sampaio and Leida (2022) contribute to this analysis, by corroborating that obesity is a complex condition that requires a multidisciplinary and personalized approach for its effective management. Furthermore, it highlights the importance of considering dietary patterns and comprehensive health care in controlling obesity.

The ABESO study (2022), carried out by the Brazilian Association for the Study of Obesity and Metabolic Syndrome (ABESO), presents a position on the nutritional treatment of overweight and obesity. This study is in line with the Melo study *et al.* (2023), which carries out a systematic review of the effects, potential and limitations of nutritional interventions aimed at

management of obesity in primary and secondary health care. Both studies highlight the importance of an adequate nutritional approach in controlling obesity.

On the other hand, the Silva study (2020), which addresses obesity in the practice of primary health care nutritionists in Paraíba, brings a regional perspective to the discussion. This study complements the ABESO study (2022), which analyzes abdominal obesity and its associated factors in adults in the state of Pernambuco. Both studies reinforce the need to consider regional particularities in the management of obesity.

However, the Swinburn study *et al.* (2019), which presents a global view of obesity, malnutrition and climate change, highlights the need for an integrated approach to address these interconnected challenges. This study is in line with the Santos and Conde study (2020), which analyzes the trend in eating patterns among adults in Brazilian capitals, suggesting that obesity is a complex condition that requires a multidisciplinary approach.

In summary, analysis of these studies suggests that obesity is a complex condition that requires a multidisciplinary and personalized approach for its effective management. Furthermore, it highlights the importance of considering dietary patterns and comprehensive health care in controlling obesity. The analysis also highlights the need to consider regional and global particularities in the management of obesity.

The results, mainly from Frolech's study *et al.* (2019), Santos and Conde (2020) and the ABESO study (2022) in which they indicate that healthy eating patterns and comprehensive health care can positively influence the control of obesity. Hormonal and inflammatory analysis offers insights into how nutrition affects metabolism and weight regulation.

When comparing with existing literature, such as that of Menezes (2020), which is in line with previous studies that highlight the importance of nutritional therapy. However, this study brings new perspectives by emphasizing the complexity of eating patterns and their relationship with abdominal obesity.

The implications of this study are broad, suggesting that nutritional interventions may be a valuable tool in the prevention and treatment of obesity. This has the potential to positively impact public health policies and clinical practices. It is recognized that the present study has limitations,

including the need for greater diversity in sampling and consideration of external factors that may influence results, such as environment and lifestyle.

5 FINAL CONSIDERATIONS

This study described that obesity is a complex and multifactorial condition that requires an integrated approach for its effective management. Nutritional interventions, when personalized and considering the particularities of each individual, can be a valuable tool in controlling overweight and obesity. In this context, dietary patterns and comprehensive health care are fundamental in controlling obesity.

The integrated approach, which considers nutritional, hormonal and inflammatory aspects, offers a more holistic view of obesity treatment. This highlights the originality and relevance of this study to the existing literature on obesity. Therefore, nutrition plays a very important role in controlling obesity. Through different effective dietary strategies, there is always the possibility of improving metabolic health and preventing obesity in adults.

It is recommended that future research further explore the relationship between nutrition and obesity, considering the cultural and socioeconomic diversity of the populations studied. In conclusion, this study contributes to the understanding of obesity as a complex condition, which requires a multidisciplinary and personalized approach for effective management.

REFERENCES

ABESO, Obesity and Metabolic Syndrome. **Position on the nutritional treatment of overweight and obesity**: nutrition department of the Brazilian Association for the study of obesity and metabolic syndrome (ABESO - 2022). Available at: https://abeso.org.br/wp-content/uploads/2022/11/positioning_2022-alterado-nov-22-1.pdf. Accessed on: 22 Feb. 2024.

ALMEIDA, ID **Scientific work methodology**. Recife: Ed. UFPE, 2021. Available at: <https://editora.ufpe.br/books/catalog/book/674>. Accessed on: 23 Feb. 2024.

BIAGIO, LD; MOREIRA, P.; AMARAL, C.K. **Eating behavior in obese people and its correlation with nutritional treatment**. Brazilian Journal of Psychiatry. v. 69, p. 171-178, 2020.

BRAGA, CA S; COSTA, LV **Obesity, Malnutrition and Poverty: Food and Nutritional Insecurity from the Perspective of the Food Social Spacer.** Economic analysis. Porto Alegre. v. 39, no. 78, p. 239-256, Mar. 2021.

BRAZIL; MINISTRY OF HEALTH. SECRETARIAT OF PRIMARY HEALTH CARE. DEPARTMENT OF HEALTH PROMOTION. **Manual for care for overweight and obese people within the scope of Primary Health Care (PHC) of the Unified Health System.** Brasilia; Ministry of Health, 2022.

CASTILHO, MM *et al.* **Multidisciplinary treatment programs for severe obesity in adults:** a systematic review. Health and Human Development. v. 9, no. 2, 2021.

CORREIA, C. C; SANTOS, A. B; CAMOLAS, J. The food insecurity and obesity paradox: a review of the Portuguese reality and associated mechanisms. **Portuguese Nutrition Act.** v. 13, no. 2018, p. 14-21, 2021.

FROHLECH, C. *et al.* Abdominal obesity and eating patterns in female shift workers. **Sciences & Public Health.** v.24, n. 9, p. 3283 – 3292, 2019.

MELO, FCT **Intersectorality of food and nutrition actions:**relationship with the prevalence of obesity in the state of Paraíba. Dissertation (Postgraduate Program in Public Health - PPGSP) - State University of Paraíba, Campina Grande, 2022.

MELO, L.B. *et al.* The impact of dietary patterns on overweight and obesity: a hormonal and inflammatory view. **Management and Secretariat Magazine.** n. 4, vol. 14, 2023. Available at: DOI: <https://doi.org/10.7769/gesec.v14i4.1929>. Accessed on: 02/22/2024.

MENEZES, MC *et al.* **Ua systematic review of the effects, potential and limitations of nutritional interventions aimed at managing obesity in primary and secondary health care.** Nutrition. 2020.

RODRIGUES, AP S. **Comprehensive health care for overweight and obese people.** Training and qualification program for care for people with Chronic Non-Communicable Diseases in Primary Care in the State of Goiás, Goiânia, 2023.

SAMPAIO, Cynthia Vieira Sanches; LADEIA, Ana Marice. Meditation, Stress, Eating Behavior and Obesity: A Literature Review-Meditation, Stress, Eating Behavior and Obesity: A literature review. **LATIN AMERICAN JOURNAL OF BODY PSYCHOLOGY.** v. 9, no. 13, p. 56-75, 2022.

SANTOS, IKS; CONDE, WL Trend in eating patterns among adults in Brazilian capitals. **rev. Brazil. Epidemiol.** v.23, 2020. Available at: DOI: 10.1590/1980-549720200035. Accessed on: 03/06/2024.

SILVA, RO **Approach and actions to obesity in the practice of primary health care nutritionists in Paraíba.** Dissertation presented to the Postgraduate Program in Nutrition Sciences at the Health Sciences Center, Federal University of Paraíba, João Pessoa, 2021.

SOWEK, Liz Elaine; CARLETTO, Marcia Regina; MULLER, Erildo Vicente. Treatment of obese adults using the SUS: an interdisciplinary proposal. **RBONE-Brazilian Magazine of Obesity. Nutrition and Weight Loss.** v. 15, no. 94, p. 403-418, 2021.

SWINBURN, BA *et al.* The global syndemic of obesity, undernutrition, and climate change: the Lancet Commission report. **The Lancet.** v. 393, n. 10173, p. 791–846, 2019.

VASCONCELOS, FAG; CALADO, CLA Nutritionist profession: 70 years of history in Basil. **Rev. Nutr.** Campinas. n. 24, vp 605-617, Jul/Aug, 2011.

VILLARREAL, HIV **Abdominal obesity: magnitude and associated factors in adults aged 20 to 59 years in the state of Pernambuco.** Master's Theses - Nutrition, 2018.

WHARTON, S. *et al.* Obesity in adults: a clinical practice guideline. **Canadian Medical Association Journal (CMAJ).** v. 192, no. 31, p. 875-891, 2020. Available at: <https://www.cmaj.ca/content/192/31/E875>. Accessed on: April 8, 2024.