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Impact of the ketogenic diet on breast cancer management: a systematic review

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Introduction: Cancer is a group of diseases marked by loss of cellular control, leading to genetic mutations and uncontrolled proliferation. Among women, breast cancer is the most common type, with rising global incidence linked to factors such as age, genetics, lifestyle, and diet. Among modifiable lifestyle habits, nutrition plays a key role in both prevention and treatment. The ketogenic diet—high in fats and low in carbohydrates—aims to replace glucose with ketone bodies as the main energy source, impacting cancer cell metabolism. This strategy seeks to inhibit the Warburg Effect, where tumor cells preferentially use glucose for energy, even in the presence of oxygen. **Objectives:** This study aimed to assess the impact of the ketogenic diet on breast cancer management by Measuring inflammatory biomarkers. **Methods:** This systematic review examined studies published between 2010 and 2024 on the PubMed database, using the descriptors "ketogenic diet," "breast cancer," "metabolic therapy," and "breast neoplasm." The study included clinical trials, systematic reviews, and experimental research on ketogenic diets in patients with breast cancer. **Results:** The reviewed studies reported significant reductions in biomarkers such as lactate, insulin, and fasting glucose, alongside anti-inflammatory effects, including lower tumor necrosis factor-alpha and increased interleukin-10 levels. An inverse correlation between carbohydrate intake and beta-hydroxybutyrate levels indicated adherence to ketosis. Additionally, the ketogenic diet showed potential in improving quality of life, body composition, and treatment adherence. **Conclusion:** The ketogenic diet emerges as a promising adjuvant strategy in breast cancer management. Its effects on tumor metabolism and systemic inflammation suggest potential benefits when integrated into multidisciplinary treatment protocols. Further research is warranted to ensure its safety and efficacy in clinical settings.

Keywords: breast cancer; ketogenic diet; patient care management.