Low-Carb, High-Protein Nutritional Approach in Diabetic Wound Healing: Real World Outcomes, Patient Perspective, and Empowering Techniques with Platform-Based Tracking

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Abstract

Chronic wounds, particularly in patients with diabetic ulcers, are often exacerbated by underlying metabolic dysfunctions. This review examines the impact of a low-carb, high-protein nutritional approach combined with platform-based patient engagement on wound healing outcomes. A retrospective chart review of 29 patients revealed that reductions in BMI, weight, and waist circumference were positively correlated with faster healing times. High levels of nutritional compliance, confirmed via platform tracking, were associated with these improvements, highlighting the importance of adherence to dietary interventions.

These findings suggest that integrating therapeutic carbohydrate restriction with standard wound care may offer a promising strategy for enhancing wound healing, particularly in metabolically compromised patients.

Introduction

Chronic wounds are a significant healthcare challenge, often complicated by underlying metabolic dysfunctions such as insulin resistance and glucose toxicity. Traditional approaches in wound care frequently involve high-carbohydrate nutritional supplements, which may exacerbate these metabolic issues and hinder the healing process. Given the critical role that diet plays in managing chronic diseases, tailored nutritional interventions, such as therapeutic carbohydrate restriction, have the potential to improve wound healing outcomes by addressing the metabolic factors at play.

In our wound clinic, we have observed that conventional treatment approaches, which focus primarily on glucose-centric medication management, often lead to glucose toxicity and medication-induced weight gain. To explore alternative strategies, we implemented a therapeutic carbohydrate restriction combined with a high-protein diet, supported by platform-based patient engagement and counseling.

This retrospective chart review done as a practice review examines the real-world outcomes of 29 patients who adopted this dietary intervention. Our goal is to assess the impact of this approach on wound healing and overall clinical status, offering insights into the potential benefits of integrating metabolic management with wound care in clinical practice. By focusing on the improvement of metabolic health alongside wound healing, we aim to provide a more effective and holistic treatment strategy for patients suffering from diabetic wounds.

Methods

This retrospective patient chart review required us to carefully select the patients for inclusion, which was done through a random selection based on when the patient presented to the clinic. Patients were offered the option to participate in a platform-based, high-touch solution designed to support metabolic health and wound healing. This platform included features such as dietary, ketone, and glucose logging. All participating patients received counseling on a low-carb, high-protein diet aimed at therapeutic carbohydrate restriction, tailored to individual metabolic needs, attended weekly visits, and had proper wound care standards that were followed.

Our clinical practice focuses on improving both metabolic health and wound healing. Patients received counseling on a low-carb, high-protein diet that included therapeutic carbohydrate restriction. Those who opted to use a platform-based, high-touch solution in conjunction with dietary changes were included in the study. Among the 29 patients who received nutritional guidance, 11 had diabetic ulcers, 7 had post-surgical ulcers, 4 had venous ulcers, 4 had arterial ulcers, and 2 had traumatic ulcers.

The initial step was identifying the types of ulcers and their causes, such as diabetic, post-surgical, etc. We then collected data on wound healing times and the patients' metabolic conditions, including physiological and biochemical markers. Data were extracted from patient charts and de-identified for analysis. This data was subsequently analyzed, categorized by ulcer etiology, and visualized using various graphing methods.

Post-procedure completion, surveys were sent out for patients to complete. The surveys addressed multiple categories which included ranking nutritional counseling, ease of following advice, and adhering to the dietary changes. These were ranked on a scale of 1 to 10, with 10 being the highest ranking. The mean/average of the rankings were found from the surveys submitted – more than half the patients submitted surveys.

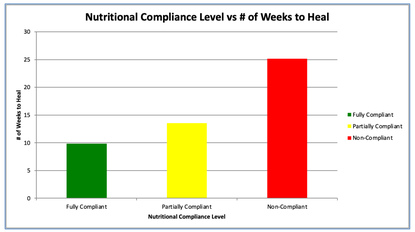

Chart 1. Time the Wound Took to Heal Based on Nutritional Compliance Levels.

Results

- **Average Healing Time**: Patients adhering to the therapeutic carbohydrate restriction experienced a reduction in wound healing time compared to the known average healing time for diabetic foot ulcers.
- **Physiological Factors and Healing Time**: Reductions in BMI, weight, and waist circumference all showed a positive correlation with faster healing. Patients who experienced decreases in these physiological factors tended to heal more quickly.
- **Nutritional Compliance**: High levels of nutritional compliance were strongly associated with faster healing times and were linked to more significant reductions in BMI and waist circumference.
- **Patient Surveys:**
  - Mean Satisfaction for Quality of Care & Nutritional Counseling: ***9.67***
  - Understanding Nutritional Guidance: ***9.0***
  - Ease of Following Recommendations: ***7.86***
  - ***85%*** expressed confidence in sustaining dietary changes long-term

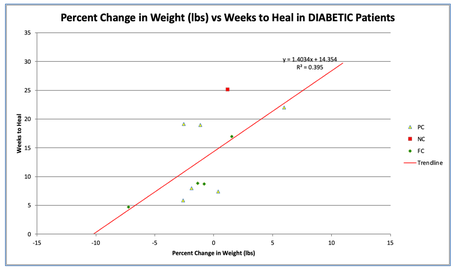

Chart 3. Number of Weeks to Heal Diabetic Wounds Based on Percentage Change in Weight.

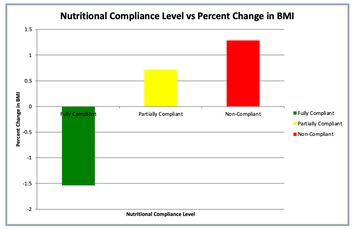

Chart 2. Percent Change in Waist Circumference Based on Nutritional Compliance

Discussion

- **Impact of Comorbidities and Patient Diversity**: The study reflects a diverse patient population with common comorbidities such as cardiovascular disease, obesity, and poor glycemic control, which may have influenced individual healing rates and contributed to variability in outcomes.
- **Metabolic Health and Healing Correlation**: Significant reductions in BMI, weight, and waist circumference were positively correlated with faster wound healing, though the impact on healing rates may vary depending on the patient's overall health status.
- **Nutritional Compliance as a Key Factor**: High nutritional compliance, confirmed via platform-based tracking, was strongly associated with faster healing and greater reductions in BMI and waist circumference, despite challenges in adhering to strict dietary regimens in real-life situations.
- **Patients' Perspective:** Patients' cited that they experienced improved energy levels, reduced pain, and better glycemic control which demonstrates the additional benefits of a low-carb, high-protein diet.

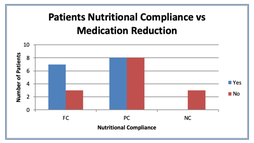

Chart 4. Patient Nutritional Compliance against Diabetes Medication

Conclusion

This study suggests that a low-carb, high-protein nutritional approach can enhance wound healing, particularly in patients with diabetic ulcers, with higher nutritional compliance linked to faster healing and greater reductions in BMI, weight, and waist circumference. The real-world setting and use of platform-based tracking for validating patient adherence are key strengths of the study. Patient feedback introduces perspectives beyond the clinical outcomes and can lead to better patient care.

However, the reliance on patient-reported data and the impact of comorbidities introduce variability in the results. Future research should focus on larger, controlled studies to better understand these factors and refine strategies for improving patient compliance, potentially through more comprehensive tracking and support systems.

Overall, this study suggests that a metabolic approach to wound healing, involving therapeutic carbohydrate restriction, can be a valuable addition to standard wound care practices, particularly in managing chronic wounds associated with metabolic dysfunction.

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