Objective: To evaluate the relationship of a primary care weight loss intervention of low-calorie ketogenic diet (LCKD) led by a Nurse Practitioner (NP) for overweight and obese adults and to evaluate if LCKD has weight loss, BMI reductions and decreases in percent body fat correlations to age and gender. Finally, this project aims to study if an NP led LCKD program has similar results to a physician lead program with similar design. 

Background: Obesity is being recognized as the new global pandemic with a significant comorbid and economic impacts to the healthcare system. Primary care is the first place that patients seek healthcare and as such the literature supports the need for primary care treatment options for all overweight and obese patients. Currently no formal guidelines exist to treat the overweight and obese and current interventions have had minimal success. A gap exists in the evaluation of NP led interventions in the management of overweight and obesity as primary care providers. 

Design: There were 368 subjects, 314 females and 54 males, who met eligibility criteria of at least 18 years of age with a BMI >25 kg/m² following an NP led LCKD who were evaluated for weight loss along with BMI reduction and changes in percent body fat. Correlations were analyzed to age and gender. Results of weight loss with NP program were compared to two physician led studies of similar design to compare results. 

Results: Statistically significant (p<0.05) reductions in weight loss, body mass index (BMI) and percent fat loss were noted at all intervals with total weight loss after 12 weeks. Males lost slightly more weight than females with a difference of 0.86% greater weight loss. The greatest weight loss occurred between ages 45-54 years however, there were no statistical differences in weight loss between age groups. Case analysis comparison with two physician led studies showed that the NP led study found more weight loss in one case but not the other. 

Conclusion: The NP led LCKD is a potentially effective weight loss option in primary care for both genders and all ages. Further prospective study is needed to determine the NP specific interventions that impact overweight and obesity implemented by the NP in primary care.

Title: Nurse Practitioner Led Low-Calorie Ketogenic Diet for Weight Loss in Overweight and Obese Adults

Keywords: Low Calorie Ketogenic Diet, Nurse Practitioner and Obesity

References:

Abstract Summary:

This project evaluated the relationship of weight loss to Nurse practitioner led low-calorie ketogenic diet and if correlations exist between the diet to gender and age. Findings noted weight loss occurred in across genders and age. The NP led program had greater weight loss than a physician led program.

Content Outline:

Introduction:

Obesity has been identified as a global pandemic. It results in disability and increased healthcare utilization and costs with rates increasing every year. In 2008, over 20 million men and 300 million women were considered obese. At the time, 65% of those lived in countries where overweight and obesity caused more deaths than underweight and starvation.

Clinically, obesity is often first recognized and diagnosed in primary care as that is the first place where most patients seek treatment. Despite the compelling statistics and recognition of obesity as a serious health issue, treatment options remain limited increasing potential for devastating consequences. There appears to be a lack of understanding of the causes of obesity combined with a lack of primary care intervention aimed at overweight and obese individuals.
One strategy for weight loss is the low-calorie ketogenic diet (LCKD). In the ketogenic diet, the macronutrient composition allows the body to begin burning fat as its main energy source instead of glucose from broken down carbohydrates. Ketosis is achieved when the body has used it stored glycogen reserves. The LCKD results in ketosis for fat burning and insulin reduction but further restricts calorie intake to encourage weight loss.

The ketogenic diet was first developed as a treatment for epilepsy. It was noted there was a significant reduction in blood sugar in these patients and research began into the ketogenic diet and diabetes type 2 (DM-2). As the diet was implemented for DM-2 patients using a low-calorie model to encourage weight loss. As weight loss was noted, research began looking at LCKD as a treatment for obesity.

**Purpose:**

The purpose of this project was to evaluate whether the LCKD is an effective approach to manage and treat adults who are overweight and obese when the intervention is led by a primary care NP.

**Research Questions:**

**Primary Question**

What is the relationship of a primary care weight loss intervention led by a Nurse Practitioner in treating overweight and obese adults through a low-calorie ketogenic diet?

**Secondary Questions**

What is the relationship of low-calorie ketogenic diet to weight loss, BMI and percent body fat?

What is the relationship of weight loss through low-calorie ketogenic diet to gender and age?

**Literature Review:**

Relevant literature was also explored to show the effective role of the NP in primary care, the efficacy of the LCKD in the management of overweight and obesity, factors affecting weight loss interventions in primary care and the presence of correlations for weight loss that exist in the literature. Several studies support the use of short-term LCKD as well as the need for effective strategies for weight loss in primary care. The results are compelling and highlight the need for further research.

Finally, a gap was identified in the literature that shows no research has looked at an NP led intervention using the LCKD in primary care to support overweight and obese individuals attain optimal health. The primary goal of this research is to provide information that may be useful in addressing this gap.

**Methodology**

This study was a quantitative, correlational and retrospective chart review of overweight and obese participants in a commercially available LCKD implemented by a primary care NP in conjunction with a nutritionist. Approximately 3000 charts of participants in the commercially available LCKD were reviewed based on the inclusion and exclusion criteria. To be included in the study, subjects had to be over the age of 18 and have a BMI over 25 kg/m². Participants in the program with a BMI under 25 kg/m² or who did not complete the program for three months were not included. The presence of correlations between LCKD and body weight, BMI and body fat percentage were analyzed over a 3-month period. Further, the presence of correlations between weight loss gender and age were evaluated for the same sample. Finally, the results of this study were compared to two physician led LCKD of similar design to determine whether NP led LCKD showed similar weight loss.
Conclusion:

Statistically significant (p≤±10.71lbs (t=41.40, p≤±±±12.49lbs (t=22.94, p≤0.000), though ANOVA testing indicated no significant weight loss difference between the age groups. Finally, a comparison with two similar physician led studies, Westman et. al (2008) and Cicero et. al (2015), showed that this NP led study recorded more weight loss in one case but not the other in 12 weeks of LCKD indicating that NP led LCKD may be as effective as physician led programs.

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Author Summary: As a Family Nurse Practitioner Dr. Kaneez Odgers is passionate about primary care and its roots in health promotion and primary prevention. In her practice she has encountered many patients with health issues stemming from overweight and obesity and has experienced first hand the lack of successful treatment options. This project was born out of those experiences in the hopes of developing a useful tool to aid patients in attaining optimal health.