



Nurse Practitioner led Low-Calorie Ketogenic Diet for Weight Loss in Overweight and Obese Adults

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Background

- The World Health Organization (WHO) has recognized obesity as the global pandemic of the twenty-first century (Moreno, Crujeiras, Bellido, & Sajoux, 2016)
- In 2008, over 20 million men and 300 million women were considered obese globally (Paoli, 2014)
- In the United States (US) 38% of adults are obese with 70.9% clinically overweight and obese (CDC, 2016).
- The Robert Wood Johnson Foundation (RWJF) has estimated obesity rates will reach 44% in all US states and surpass 60% in 13 states by 2030 (RWJF, 2012)
- Health care associated costs of obesity were estimated at US \$2.0 trillion globally and US\$ 149.4 billion in the United States in 2014 (Tremmel, Gerdtman, Nilsson, & Saha, 2017)
- In NJ the cost of obesity is projected at \$9.3 billion (NJDOH, 2015).

History of Ketogenic Diet



Purpose

- To evaluate whether the low-calorie ketogenic diet (LCKD) is an effective approach to manage and treat adults who are overweight and obese when the intervention is led by a primary care Nurse Practitioner (NP)
- To determine correlations between LCKD and gender/age
- The independent variable was the NP intervention of the LCKD
- The dependent variables were a reduction of weight, body mass index (BMI), and decreased body fat percentage

Significance to Nursing/Healthcare

Goal of Healthy People 2020

“To promote health and to reduce chronic disease risk through the consumption of healthful diets and achievement of healthy body weights”

NPs are the new face of primary care

- NPs in primary care are well positioned to provide the education and support that overweight and obese patients need to optimize their health
- Clinically, obesity is usually first recognized and diagnosed at a routine primary care visit

Research Gap

No research was found on the effectiveness of NP led LCKD as a weight loss intervention in primary care for overweight and obese individuals

Research Design

- Quantitative, correlational, retrospective chart review of overweight/obese adults who followed a commercially available LCKD implemented by a primary care NP
- The program incorporated regular support from the NP and a nutritionist as well as weight and BMI monitoring and percent body fat
- Participant gender and age identified to determine the relationship of weight loss through LCKD to each
- Subjects were followed for 12 weeks with measurements recorded at baseline, Week 1, 4 and 12.
- Convenience sample from subjects who participated in a commercially based LCKD
- Included males and females, 18 years and older with BMI over 25kg/m² who participated in the commercially available LCKD program
- Those with BMI under 25kg/m², who did not complete at least 12 weeks or had hyper/hypothyroid or polycystic ovarian disease were excluded

Data Analysis

- Retrospective chart review using descriptive and quantitative analysis
- Statistics of central tendency were reported for participants
- Additional analysis examined correlations of gender and age in relation to weight loss through LCKD

Demographic of Participants

Gender	N	Percentage	Mean Age	SD
Females	314	85.3%	47.88	11.43
Males	54	14.7%	47.61	11.82
Total	368	100%	47.84	11.47

Results

Metric	Week 0	Week 12
Mean weight (lbs)	205.65±46.89	182.54±41.63
Mean weight loss (lbs)		-23.11±10.71 (t=41.40, p<0.000)*
% Weight loss		11.17±4.17 (t=51.38, p<0.00)*
Mean BMI (kg/m ²)	34.02±6.02	30.20±5.43
Mean BMI reduction (kg/m ²)		-3.82±1.64 (t=44.72, p<0.000)*
Mean % Body Fat	41.86±5.93	37.80±6.94
% Body fat loss		-4.06±3.37 (t=23.09, p<0.000)*

*Statistical significance p<0.05

Results (cont.)

Females		
Metric	Week 0	Week 12
Mean weight (lbs)	194.60±34.73	173.11±31.96
Mean weight loss (lbs)	0	-21.49±8.93 (t=42.61, p<0.000)*
% Weight loss	0	11.04±0.13 (t=47.32, p<0.00)*
Mean BMI (kg/m ²)	33.37±5.57	29.67±5.12
Mean BMI reduction (kg/m ²)	0	-3.69±1.51 (t= 43.26, p<0.000)*
Mean % Body Fat	41.59±6.00	37.59±7.06
% Body fat loss	0	-3.99±3.45 (t= 20.54, p<0.000)*

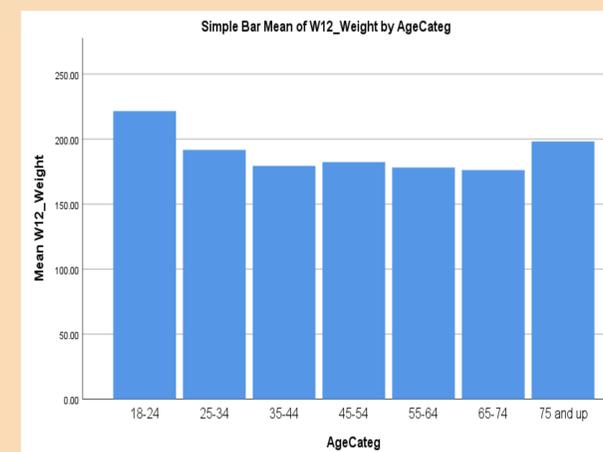
*Statistical significance p<0.05

Males		
Metric	Week 0	Week 12
Mean weight (lbs)	269.87±56.19	237.34±48.77
Mean weight loss (lbs)		-32.52±14.76 (t=16.19, p<0.000)*
% Weight loss		11.90±4.33 (t=20.18, p<0.00)*
Mean BMI (kg/m ²)	37.82±7.13	33.24±6.16
Mean BMI reduction (kg/m ²)		-4.58±2.11 (t= 15.99, p<0.000)*
Mean % Body Fat	43.44±5.21	39.02±6.12
% Body fat loss		-4.43± 2.90 (t=11.22, p<0.000)*

*Statistical Significance p<0.05

Weight Loss Between genders showed a difference of 0.86% suggesting that LCKD may be effective for all genders

Age



Results (cont)

- Each age group showed statistically significant weight loss after 12 weeks of LCKD (p<0.05)
- No statistically significant differences in weight loss was noted between the age groups
- LCKD may be an effective option for all ages

Comparison of NP led with physician led LCKD

Author	Year	Study Type	Setting	N	Design	Mean weight loss at 12 weeks (lbs)	Mean weight loss difference at 12 weeks (lbs)
Westman et al.	2008	Randomized with a comparison group, prospective, voluntary active participation	Single center, USA	84	Physician led, Outpatient, Diet, lifestyle, exercise counselling provided, weight loss monitoring every week for 3 months, then every other week for 3 months	-18.26	4.85 (t= -8.692, p<0.000)
Cicero et al.	2015	Descriptive, prospective, voluntary active participation	Multi-center, Italy	161	Physician led, outpatient, Diet counselling provided, weight loss monitoring done at 3 months, 12 months, Protein meal replacements used	-26.40	3.29 (t=5.89, p<0.000)
Odgers	2018	Retrospective, correlational, passive participation	Single center, commercial weight loss program, USA	368	Nurse Practitioner led, outpatient, Diet, lifestyle exercise counselling provided, weight loss monitoring available on a weekly basis, protein meal supplements available	-23.11	

*Statistical Significance p<0.05

Conclusion

- NP led LCKD may be as effective as physician led programs
- LCKD is a tool that may be employed by NP's in primary care to treat overweight and obese adults
- With the diverse skill set of NP's, patients would benefit from a knowledgeable provider of weight loss strategies and who can provide the emotional support they need to succeed

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