A Meta-Analysis of Health Outcomes with Different Dietary Approaches.

Kevin Reid PA-S
The University of Findlay

Background

Diets come in and out of favor, some stick around and others go to the way side. One thing that that has stuck around is obesity in the United States with nearly 40% of U.S. adults being considered obese. This research was conducted to analyze the efficacy of intermittent fasting and the ketogenic diet in hopes to give people confidence in a new diet.

Methods

Information for this research was obtained through searching online websites and other scholarly research papers.

Results

This research found strong correlations between healthy blood sugars and intermittent fasting. One study found a 2.5-fold increase in at target fasting blood sugars with its participants. Strong research was found on health biomarkers including cholesterol, triglycerides, BMI, and glucose showing improvement with the ketogenic diet.

Conclusion

Further research on both intermittent fasting and the ketogenic diet is needed, though this meta-analysis reveals clear health benefits of both interventions.

Intermittent fasting **and the** ***Ketogenic diet*** **can help you lose weight, lower your blood sugar, and correct your lipid levels.**

VIEW NOW

References

Hales CM, Carroll MD, Fryar CD, Ogden CL. Prevalence of obesity among adults and youth: United States, 2015–2016. NCHS data brief, no 288. Hyattsville, MD: National Center for Health Statistics. 2017. Accessed 6/5/19.
Diabetes; World Health Organization; http://www.who.int/mediacentre/factsheets/fs312/en/; accessed 11/21/18.
Bullard KM, Cowie CC, Lessem SE, et al. Ty - United States, 2016. MMWR Morb Mortal Wkly Rep. 2018;67(12):359-361. Published 2018 Mar 30. doi:10.15585/mmwr.mm6712a2; accessed 11/21/18.
Monique Tello, MD, MPH; Intermittent fasting: Surprising update; Harvard Health Publishing; https://www.health.harvard.edu/blog/intermittent-fasting-surprising-update-2018082014283; published June 29, 2018; accessed 6/5/19.
Should you try the keto diet?; Harvard Health Publishing; https://www.health.harvard.edu/staying-healthy/should-you-try-the-keto-diet ; published October, 2018; accessed 6/5/19.
Arnason TG, Bowen MW, Mansell KD. Effects of intermittent fasting on health markers in those with type 2 diabetes: A pilot study. World J Diabetes. 2017;8(4):154–164. doi:10.4239/wjd.v8.i4.154; accessed 6/12/19.
Wilhelmi de Toledo F, Grundler F, Bergouignan A, Drinda S, Michalsen A (2019) Safety, health improvement and well-being during a 4 to 21-day fasting period in an observational study including 1422 subjects. PLoS ONE 14(1): e0209353. https://doi.org/10.1371/journal. pone.0209353
Hussein M. Dashti, Naji S. Al-Zaid, et al.; Long term effects of ketogenic diet in obese subjects with high cholesterol level; *Springer*; 2006; Molecular and Cellular Biochemistry 286: 1–9; https://link.springer.com.ezproxy.findlay.edu/content/pdf/10.1007%2Fs11010-005-9081-1.pdf; Accessed May 15, 2019.
Yancy WS Jr, Foy M, Chalecki AM, Vernon MC, Westman EC. A low-carbohydrate, ketogenic diet to treat type 2 diabetes. Nutr Metab (Lond). 2005;2:34. Published 2005 Dec 1. doi:10.1186/1743-7075-2-34
Patterson, Ruth E., and Dorothy D. Sears; Metabolic Effects of Intermittent Fasting; *Annual Review of Nutrition*; 2017; vol. 37; no. 1; pp. 371–393; doi:10.1146/annurev-nutr-071816-064634; published July 17, 2017, accessed 8/24/19.
Diet Review: Ketogenic Diet for Weight Loss; Harvard T.H. Chan; https://www.hsph.harvard.edu/nutritionsource/healthy-weight/diet-reviews/ketogenic-diet/; accessed 8/24/19.

Intermittent Fasting

Measured Blood glucose (mmol/L)	Baseline	Intervention	Follow-up
Morning Blood glucose (fasting)			
<7.0	13.8%	34.1%	15.1%
7.0-9.05	52.0%	40.7%	49.6%
9.05-11.1	33.3%	18.0%	32.8%
11.1	0.8%	7.1%	2.5%
Evening Blood Glucose (postprandial)			
<7.0	24.5%	27.7%	12.9%
7.0-9.05	28.1%	32.9%	41.6%
9.05-11.1	27.4%	19.7%	28.7%
>11.1	20.0%	19.7%	16.8%

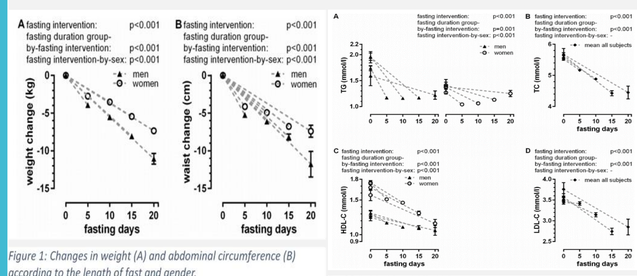

Figure 1: Changes in weight (A) and abdominal circumference (B) according to the length of fast and gender.

Figure 3: Fasting-induced changes in lipid metabolism.

Ketogenic Diet

	Group 1 (high cholesterol)	Group 2 (normal cholesterol)	Total average
Weight (kg)	-25.8	-26.0	-25.9
Tot. Chol. (mmol/L)	-2	-0.5	-1.25
HDL (mmol/L)	0.5	0.4	0.45
LDL (mmol/L)	-2	-0.7	-1.35
TG (mmol/L)	-3.25	-1	-2.1
Glucose (mmol/L)	-4.5	-0.7	-2.6

Measurement	Week 0 Mean (SD)	Week 16 Mean (SD)	Change %	p value*
Body weight, kg	131.4 (18.3)	122.7 (18.9)	-6.6	<0.001
Body mass index, kg/m^2	42.2 (5.8)	39.4 (6.0)	-6.6	<0.001
Waist circumference, cm	130.0 (10.5)	123.3 (11.3)	-5.2	<0.001
Percent body fat, %	40.4 (5.8)	37.0 (6.0)	-8.4	<0.001
Systolic blood pressure, mm Hg	135.1 (14.8)	135.4 (17.6)	0.2	0.9
Diastolic blood pressure, mm Hg	79.2 (14.9)	74.1 (13.0)	-6.4	0.1
Heart rate, beats/min	81.2 (12.9)	74.6 (14.0)	-8.1	0.01

Measurement	Week 0 Mean (SD)	Week 16 Mean (SD)	Change %	p value*
Hemoglobin A_{1c}, %	7.5 (1.4)	6.3 (1.0)	-16.0	<0.001
Glucose, mmol/L	9.08 (4.09)	7.57 (2.63)	-16.6	0.04
Total cholesterol†, mmol/L	4.61 (1.40)	4.54 (1.26)	-1.5	0.7
Triglyceride‡, mmol/L	2.69 (2.87)	1.57 (1.38)	-41.6	0.001
HDL-C‡, mmol/L	0.92 (0.20)	0.99 (0.22)	7.6	0.08
LDL-C‡, mmol/L	2.51 (0.64)	2.77 (0.89)	10.4	0.1