COMPARISON OF KETOGENIC AND VEGETARIAN DIET FOR WEIGHT LOSS: A SYSTEMATIC REVIEW

Minan Ibrahim
Zahraa Kamona
Zainab Kamona
Cirsten Roberson
Research Question:

How efficient is weight loss by means of a ketogenic diet in conjunction with side effects compared to a vegetarian diet?
Objective:

Analyze the data researched and come to a conclusive decision of which diet (ketogenic or vegetarian) is predominantly more beneficial.
What is a Ketogenic Diet?

- High Fat, moderate protein, low carbohydrate diet

<table>
<thead>
<tr>
<th>Nutritional Intake</th>
<th>Ketogenic Diet</th>
<th>Normal Healthy Balanced Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-80% of total calories from Fat</td>
<td>20-35% of total calories from Fat</td>
<td></td>
</tr>
<tr>
<td>15-20% of total calories from Protein</td>
<td>10-35% of total calories from Protein</td>
<td></td>
</tr>
<tr>
<td>5% of total calories from Carbohydrates</td>
<td>45-65% of total calories from Carbohydrates</td>
<td></td>
</tr>
</tbody>
</table>
In a ketogenic diet, you shrink the body’s supply of vitamins and minerals, so it is important that you are eating...

Recommended Food Intake:

- Meats (chicken, fish, beef, and lamb)
- Above-ground vegetables (broccoli, cauliflower)
- Leafy greens (Kale and spinach)
- High-fat dairy (cheese, cream, and butter)
- Nuts and seeds
- Avocado
- Berries
- Healthy fat and oils (olive oil, coconut oil, fish oil)
- To prevent dehydration, drink ~3L of water per day (minimum)
AVOID

What is a Ketogenic Diet?

● In 1920 it became an effective treatment for epilepsy in children.
● Potentially helpful for:
  ● Weight-loss
  ● Appetite suppression,
  ● Blood sugar control to help improve lipid profile and hypertension

A Ketogenic Diet Potentially Therapeutic For:

- Cancers/Tumors
- Cardiovascular Diseases
- Diabetes
- Epilepsy
- Obesity
- Neurological Disorders (Alzheimer’s/Parkinson’s)
Disadvantages of Ketogenic Diet:

- Requires an adaption process
- Increase risk of nutritional deficiencies
- Limited sugars and carbs
- High cholesterol (excessive meat intake)
- Ketoacidosis
What is a Vegetarian Diet?

- A diet which excludes meat, chicken and fish

Types of Vegetarian Diet:

- Lacto-Ovo Vegetarian
- Lacto Vegetarian
- Ovo Vegetarian
- Vegan
In a vegetarian diet, you shrink the body’s supply of:

- Iron
- Calcium
- Zinc
- Vitamin B12
- Vitamin D

So it is important that you are eating...
Recommended Food Intake:

Non-Starchy Vegetables
- Leafy greens
- Broccoli
- Zucchini
- Eggplant
- Tomatoes

Starchy Vegetables
- Potatoes
- Legumes
- Beans
- Lentils
- corn

Fruits
- All whole fruits (avoid: dried or juiced)

Whole Grains
- 100% whole wheat
- Oats
- Brown rice

Beverages
- Water
- Unsweetened plant “milks”
- Decaffeinated coffee and tea

Omega 3 fatty acids
- Chia seeds
- Ground flaxseed

Spices
- All spices

**AVOID**

- **Animal products**
  - Meat
  - Fish
  - Eggs
  - Dairy

- **Processed artificial foods**
  - Sugar, sodium, Trans fats and preservatives

A Vegetarian Diet Potentially Therapeutic
For:

- Cardiovascular Diseases
- Cholesterol
- Diabetes
- Hypertension
- Obesity
- Lower intake of saturated fats (decreases heart problems/type 2 diabetes)

Disadvantages of Vegetarian Diet:

- Too much fiber can lead to poor absorption of Calcium, Zinc, Iron
- Protein deficiency
- Consuming less calories
Keywords: weight loss, side effects, benefits, ketogenic diet, vegetarian diet

PRISMA Flow Chart
Inclusion Criteria:

- Must be a scholarly or peer-reviewed source
- A relevant article within the last 20 years
- The articles published in English language only
- Will be a randomized control trial and cohort study comparing ketogenic diet and vegetarian diet
### Ketogenic Diet: Weight Loss

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westman et al.</td>
<td>2018</td>
<td>Low-carb diet is effective for improving and reversing type 2 diabetes. There is a significant weight loss in overweight and obese people with Type 2 Diabetes, and elimination/reduction of Rx with the ketogenic diet.</td>
</tr>
<tr>
<td>Paoli et al.</td>
<td>2018</td>
<td>Ketogenic diet causes a reduction in appetite due to higher satiety effect of proteins, reduction in lipogenesis and increased lipolysis and an increased metabolism of gluconeogenesis and the thermic effect of proteins</td>
</tr>
<tr>
<td>Thornton et al.</td>
<td>2017</td>
<td>When the ketogenic diet is done with a high water intake, this leads to loss of body weight so water must be observed from ingestive behavior to metabolic function.</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Findings</td>
</tr>
<tr>
<td>------------------------</td>
<td>------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Johnstone et al.</td>
<td>2008</td>
<td>Ad libitum energy intakes were lowered with low-carb ketogenic diet than with medium-carb non-ketogenic diet (P=0.02). Hunger was significantly lowered with LC diet (p = 0.014). Weight loss was significantly higher with LC diet (p = 0.006).</td>
</tr>
<tr>
<td>Yancy et al.</td>
<td>2004</td>
<td>A low-carb diet versus a low-fat diet is used to treat the effect of a high glycemic index in patients with type 2 diabetes, obesity and hyperlipidemia.</td>
</tr>
<tr>
<td>Dashati et al.</td>
<td>2004</td>
<td>The weight, body mass index, triglyceride level, LDL cholesterol and blood glucose level decreased, while the HDL cholesterol level increased. (P&lt;0.0001).</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Findings</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Crimaro et al. <em>Observational study</em></td>
<td>2017</td>
<td>People on this diet have a lower BMI than those on non plant-based diets. Plant based diets should be considered for those who want to lose weight.</td>
</tr>
<tr>
<td>Chavarro et al. <em>Randomized Controlled Trials</em></td>
<td>2015</td>
<td>Vegetarian diet showed a significant weight loss in comparison to non-vegetarian diet. Individuals who consumed energy restricted (ER) vegetarian diet demonstrated a significantly greater weight reduction than the ones without the ER.</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Finding</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tuso et al.</td>
<td>2013</td>
<td>Plant-based diets are associated with significant weight loss &amp; lower risk for cardiovascular diseases and mortality compared to non-plant based diets. The Vegetarian diets are very beneficial due to their ability to reduce cardiovascular diseases, diabetes, cholesterol, obesity, blood pressure, weight loss and most importantly they were cost effective. Recommendations to eat vegetables and beans, seeds, nuts, whole grains and to avoid or limit animal products, added fats, oils and refined or processed Carbohydrates.</td>
</tr>
<tr>
<td>Sabate et al</td>
<td>2010</td>
<td>PBD is a positive approach to prevent childhood obesity</td>
</tr>
</tbody>
</table>
Conclusion:

- It is important for patients to consult with their primary care physicians and dietitians before going on the ketogenic diet or vegetarian diet.
- In a shorter duration, there is a more significant weight reduction using the ketogenic diet vs. vegetarian diet.
- A ketogenic diet is recommended for patients with obesity, type 2 diabetes and hyperlipidemia.
- Ketogenic diet decreases appetite.
- Randomized clinical trials and lower “p” values make the ketogenic diet more significant.
Recommendations:

- A singular focus on weight loss for ketogenic diet and vegetarian diet.
- Raise awareness of the benefits and side effects of ketogenic diet and vegetarian diet, in order to decrease health risks.
- More human research, in general.
- Further studies on children and communities in larger populations.
- More specific, longitudinal cohort studies in diverse communities.
- A policy to decrease the costs of healthy foods.
ACKNOWLEDGEMENTS

- Saint James School of Medicine, St. Vincent and the Grenadines
  - Dr. Minakova, mentor
  - Dr. Zeine, research professor
References

COMPARISON OF KETOGENIC AND VEGETARIAN DIET FOR WEIGHT LOSS: A SYSTEMATIC REVIEW

Authors: Minan Ibrahim, Zahraa Kamona, Zainab Kamona, Cirsten Roberson
Mentor: Dr. Victoria Minakova
Saint James School of Medicine
Cane Hall, Saint Vincent & The Grenadines

## Ketogenic Diet: Weight Loss

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wang et al.</td>
<td>2015</td>
<td>Ketogenic diet was effective for losing weight compared to a control diet.</td>
</tr>
<tr>
<td>Pedersen et al.</td>
<td>2015</td>
<td>Ketogenic diet was effective for losing weight compared to a high-carbohydrate diet.</td>
</tr>
<tr>
<td>Taylor et al.</td>
<td>2015</td>
<td>Ketogenic diet was effective for losing weight compared to a standard diet.</td>
</tr>
</tbody>
</table>

## Vegetarian Diet: Weight Loss

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commins et al.</td>
<td>2017</td>
<td>Vegetarian diet was effective for losing weight compared to a non-vegetarian diet.</td>
</tr>
<tr>
<td>Chen et al.</td>
<td>2018</td>
<td>Vegetarian diet was effective for losing weight compared to a non-vegetarian diet.</td>
</tr>
<tr>
<td>Sabah et al.</td>
<td>2019</td>
<td>Vegetarian diet was effective for losing weight.</td>
</tr>
</tbody>
</table>

## CONCLUSION

- It is important for patients to consult with their primary care physicians before going on the ketogenic diet or vegetarian diet.
- In a shorter duration, there is a more significant weight reduction using the ketogenic diet vs. vegetarian diet.
- In ketogenic diet, it is highly recommended that patients with obesity, type 2 diabetes and hyperlipidemia use this diet to become less weight is important. In hyperlipidemia, the lipid profile is normalized.
- Ketogenic diet decreases appetite.
- Most articles in the frame of ketogenic diet are randomized clinical trials which means that the results are more significant. More "p" values are shown in these studies, which shows more significance of the results.

## References

- Image 501x330 to 720x405
- Image 251x202 to 430x293
- Image 435x110 to 615x293
- Image 435x14 to 614x106
- Image 42x177 to 246x294
- Image 251x14 to 431x105
- Image 251x110 to 431x201
- Image 42x14 to 246x173