**Introduction:**

**Research Question:** How does the ketogenic diet affect the oral cavity?

- Ketogenic ‘keto’ diet emphasizes high fat, low carbohydrate consumption.1
- Ketogenic diet avoids simple carbohydrates and sugars.
  - Sugar substitutes are almost always utilized.8
- Fat heavy diets cause the body to go into ketosis: a process in which the body burns fat for energy because glucose isn’t available.2
- The keto diet has many positive effects for the body, including several specific to the oral cavity:
  - Decreased caries risk, gingival inflammation, and bleeding.4,6,11
  - Reduction of acidity and plaque mutants when paired with the keto approved sugar substitute: erythritol.9
- The keto diet also can cause ‘keto breath’ an overly sweet, fruit-scented breath.2,7

**Review of Literature:**

- **Randomized controlled pilot study**
  - Ketogenic diet also can cause ‘keto breath’ an overly sweet, fruit-scented breath.2,7
  - Ketogenic diet has many positive effects for the body, including several specific to the oral cavity:
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    - Decreased caries risk, gingival inflammation, and bleeding.4,6,11
- Sugar substitutes are almost always utilized.8

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**References:**

3. DeWitt, A. (2016). 4 Ways the Keto Diet is Excellent for Your Teeth
10. Sefo, D. and Stefanou, L. (2012). In vivo periodontal inflammation in humans - a randomized controlled pilot study

**Recommendations:**

- Talk to patients about their diet!
  - Discuss the keto diet as an option with patients with high caries risk.
  - Reduction of carbs and sugars reduce incidence of caries.4,6,10
- Keto diet can be recommended to patients with gingivitis to help reduce inflammation and bleaching of the gingiva.11
- Erythritol should be recommended as a sugar substitute to patients on keto diet due to its ability to reduce acid and plaque levels in the oral cavity.9
- Keto breath can be masked by chewing gum to stimulate salivation.2,5,10

**Conclusion:**

- Low carb, high protein, and fat diets, such as the keto diet, have had a recent resurgence in popularity.2,3
- Given the numerous beneficial effects on the oral cavity,4,6,11 it is important for dental hygienists know them and be able to educate patients using the keto diet.
  - Reduce caries risk by decreasing amount of sugary nutrients bacteria feed upon.4
  - Reduce gingival inflammation and bleeding without a change in oral hygiene performance.11
- Erythritol should be the sugar substitute of choice when on the Keto diet due to its association with reduction of acidity in the oral cavity and reduction of plaque.9

**Low Carb, High Fat Diet and Gingival Inflammation**

Randomized controlled pilot study

**Keto Diet Sugar Substitutes Reducing Caries:**

- Xylitol Group
  - No significant decrease in plaque growth or levels of acid
- Erythritol Group
  - Decrease in plaque levels
  - Lower levels of acetic acid, lactic acid, and propionic acid than that of the other groups
  - Lower counts of salivary and plaque mutants streptococci as the other groups
- Sorbitol Group
  - No significant decrease in plaque growth or levels of acid

Erythritol is associated with reduced levels of oral acidity within the oral cavity and reduction of salivary and plaque mutants.

**Low Carbohydrate Consumption and Caries Reduction**

Randomized controlled pilot study

**Carbohydrate study:**

- Classic cohort study in 436 individuals over five years

**Results:**

- Increased consumption of sugar can increase caries activity
- Risk is greater with stronger retention tendencies of food consumed
- Risk is greatest with sticky forms of sugar eaten between meals
- When intake of sugar is reduced, the incidence of caries will fall

**References:**

10. Sefo, D. and Stefanou, L. (2012). In vivo periodontal inflammation in humans - a randomized controlled pilot study

**Xylitol Group**

- No significant decrease in plaque growth or levels of acid

**Erythritol Group**

- Decrease in plaque levels
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**Sorbitol Group**

- No significant decrease in plaque growth or levels of acid

**Xylitol**

Xylitol is associated with reduced levels of oral acidity within the oral cavity and reduction of salivary and plaque mutants.