

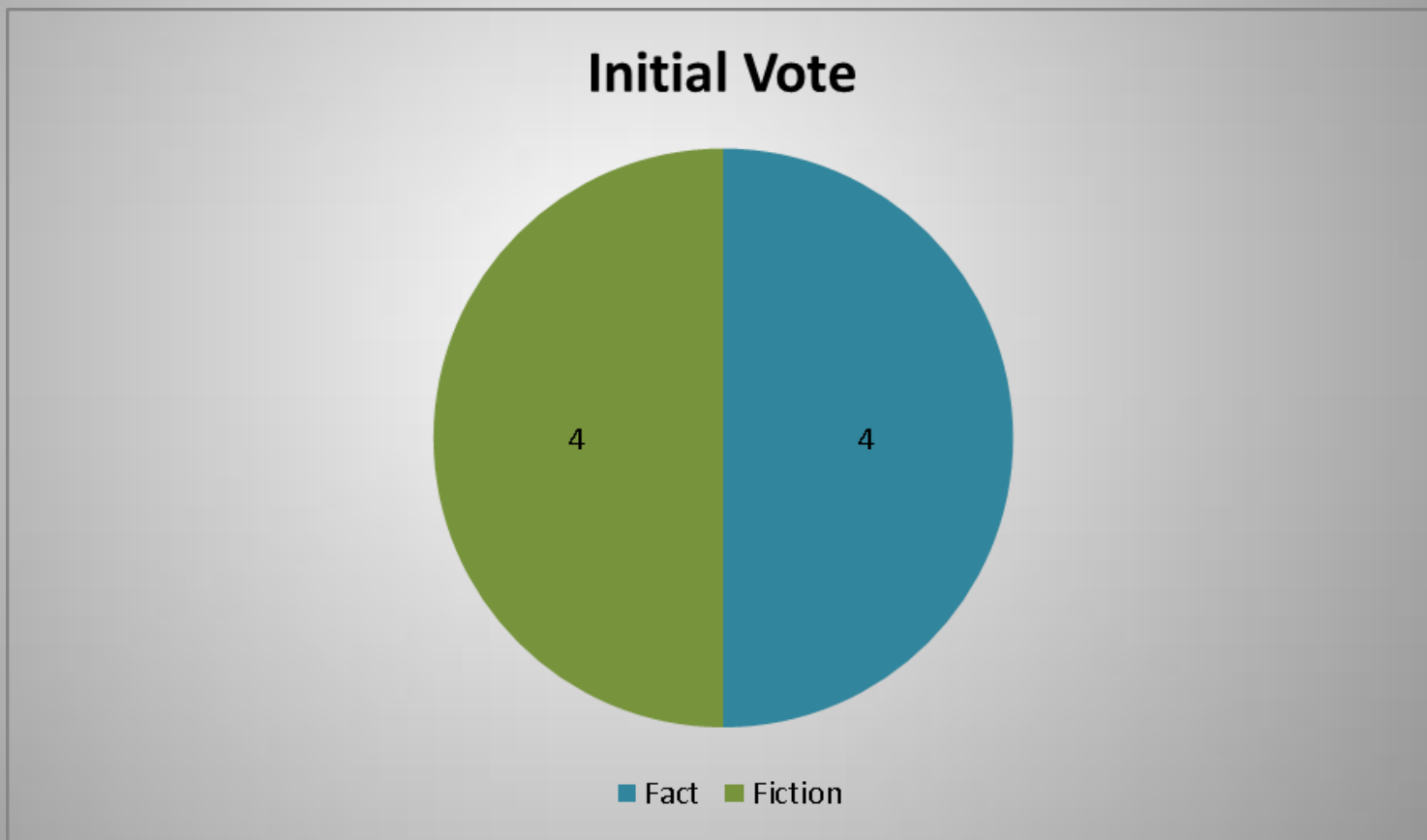
## Does Eating Before Bed Cause Nightmares?

Lyndsi Powell; Curstyn Alexander;  
La'sheena Brooks; Max Cassell; Danya  
Lynn MacDonald; Hannah Modlin;  
Ovwoioise Omoijuanfo; Christopher  
Slater

## Healthcare Belief

- Eating before going to sleep will give you nightmares.

# Initial Group Vote



# Background

- What is sleep?
  - Five stages of sleep. [9]
    - 1: sleep onset
    - 2: light sleep
    - 3/4: deep sleep
    - REM (rapid eye movement) sleep
  - REM is when dreams and nightmares happen.[2]
  - Dream in every stage, but the contents differ. [9]

## Background

- All the neurotransmitters in the brain can be affected by chemical imbalances → meaning that it will affect REM sleep (stage in which most dreams occur).<sup>[8]</sup>
- Eating increases the body's metabolism → may be the cause of overnight activity of the brain.<sup>[8]</sup>
- Some substances like alcohol can result in a lighter sleep and totally avoid REM stage while others will increase REM sleep.<sup>[8]</sup>

# Background

## Eating Disorders:

- In patients found to have Nighttime Eating Syndrome (NES) parasomnias (anything abnormal during sleep) were frequent.<sup>[4]</sup>
- Large numbers of obese patients have eating habits that form nocturnal hyperphagia, morning anorexia, and insomnia.<sup>[10]</sup>

# Background

- Case Study <sup>[3][6]</sup>:
  - Over a one week period, the British Cheese Board gave 100 men and 100 women 20 grams of cheese a half hour before they went to sleep.
    - Ate one of the 6 cheeses: Stilton, Cheddar, Red Leicester, British Brie, Lancashire or Cheshire.
  - Milk has an amino acid called tryptophan, known for normalizing sleep and reducing stress levels.

# Background

- Case Study (cont.) [3][6]:
  - 67% remembered their dream; none said anything about nightmares.
  - 85% of females given a piece of Stilton reported very crazy vivid dreams.
  - 83% who ate Red Leicester reported good sleep.
    - 60% dreaming about fond childhood memories.
  - Cheddar involved dreams about celebrities.
  - Cheshire cheese produced no dreams.
  - Cheese before bed doesn't necessarily increase the risk of nightmares.



# Background

- Overall, it is suggested that:
  - Foods with high melatonin and serotonin should be eaten before bed (grapes, cherries). [1]
  - Foods with high sugar, high fat, and high protein content should be given 2 hours prior to sleep to digest. [1]
  - Foods with high-sugar content should be avoided. [5]

# Hypothesis

- Eating within 10 minutes of lying down to go to bed, especially high-sugar foods, causes more sleep distress and nightmares.

# Experiment

- Still pending IRB approval.

# Experiment

- Over 4 nights, data is collected by individuals in three groups.
  - Control group (eats and sleeps as they normally do).
  - Green group (eats no less than one hour before bed).
  - Orange Group (eats right before bed).

# Experiment

- Each individual presents the night's data as following:
  - Did they have a nightmare (yes or no)?
  - How did they sleep on a scale from 1-10 (1 being “Absolutely terrible!” and 10 being “The most refreshed I’ve ever felt”)?
  - What did they eat prior to sleeping?

# Experiment

Name	Night 1 Monday	Night 2 Tuesday	Night 3 Wednesday	Night 4 Thursday
<b>Danya Lynn</b>	Nightmare: <b>Yes</b> Sleep quality:3 Food Eaten: Brownie	Nightmare: <b>No</b> Sleep quality:4 Food Eaten: Vanilla ice cream	Nightmare: <b>Yes</b> Sleep quality:4 Food Eaten: Chocolate ice cream	Nightmare: <b>No</b> Sleep quality: 3 Food Eaten: HoHos
<b>Hannah</b>	Nightmare: <b>Yes</b> Sleep quality:4 Food Eaten: Jolly ranchers, sour skittles, marshmallows	Nightmare: <b>No</b> Sleep quality:3 Food Eaten: Lucky Charms, Sour Skittles	Nightmare: <b>No</b> Sleep quality:7 Food Eaten: Chocolate cake w/ whipped cream, Hershey's chocolate	Nightmare: <b>No</b> Sleep quality:6 Food Eaten: Cherry Poptarts, Doritos
<b>Chris</b>	Nightmare: <b>No</b> Sleep quality:7 Food Eaten: Nothing	Nightmare: <b>No</b> Sleep quality:7 Food Eaten: Nothing	Nightmare: <b>No</b> Sleep quality:7 Food Eaten: Nothing	Nightmare: <b>No</b> Sleep quality:7 Food Eaten: Nothing
<b>La'sheena</b>	Nightmare: <b>Yes</b> Sleep quality:6 Food Eaten: Pasta	Nightmare: <b>No</b> Sleep quality:8 Food Eaten: Sloppy Joe, Fries	Nightmare: <b>No</b> Sleep quality: 10 Food Eaten: Subway	Nightmare: <b>No</b> Sleep quality: 10 Food Eaten: Wendy's

Key:
<b>Eat Right Before Bed</b>
<b>Eat No Less Than 1 hour Before Bed</b>
<b>Control Group</b>

# Experiment

<p><b>Curstyn</b></p>	<p>Nightmare: <b>No</b>            Sleep quality: <b>7</b>            Food Eaten:  <b>Cheese quesadillas</b></p>	<p>Nightmare: <b>No</b>            Sleep quality: <b>7</b>            Food Eaten:  <b>Lasagna</b></p>	<p>Nightmare: <b>No</b>            Sleep quality: <b>5</b>            Food Eaten:  <b>Cheeseburger, pop</b></p>	<p>Nightmare: <b>No</b>            Sleep quality: <b>8</b>            Food Eaten:  <b>Cheeseburger</b></p>
<p><b>Lyndsi</b></p>	<p>Nightmare: <b>Yes</b>            Sleep quality: <b>4</b>            Food Eaten:  <b>Pasta, pizza</b></p>	<p>Nightmare: <b>No</b>            Sleep quality: <b>6</b>            Food Eaten:  <b>Chicken Noodle Soup</b></p>	<p>Nightmare: <b>No</b>            Sleep quality: <b>4</b>            Food Eaten:  <b>Chocolate Chip Cookie</b></p>	<p>Nightmare: <b>No</b>            Sleep quality: <b>7</b>            Food Eaten:  <b>Noodles</b></p>

<p>Key:</p>
<p><b>Eat Right Before Bed</b></p>
<p><b>Eat No Less Than 1 hour Before Bed</b></p>
<p><b>Control Group</b></p>

## Data Analysis

- On average, 42% of the time, the participants had a sleep quality score of 5 or below.
- The average sleep quality score for all the participants was 7.4.
  - The average among the Orange Group was 4.25.
  - The average among the Green Group was 7.75.
  - The average among the Pink Group was 6.00.



## Conclusion

- Eating prior to bed does not necessarily contribute to nightmares.
- In fact, nightmares only occurred 4 out of 24 possible times (for all of the participants).
- However, sleep quality did seem to decrease as the time between eating and sleeping decreased.
- Only part of our hypothesis is correct, so the healthcare belief itself is fiction.

## References

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