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# Beneficially impacting teenagers' knowledge and ability to deal with migraines

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**RUNNING HEAD: Beneficially Impacting Teenagers' Knowledge**

**Beneficially Impacting Teenagers' Knowledge and Ability to Deal with  
Migraines**

**Mollie Newman**

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**Abstract**

Migraines are a growing epidemic, without a lot of medical research there is no definite cause or cure for migraines. My migraines came about when I was twelve years old, suffering through school I found some days unbearable, doctors never had a straight answer as to what triggered my migraines and they prescribed me a variety of prescriptions. I feel that I can help those students of River High School in Carmel, CA by spreading my knowledge to them about how important diet is in everyday life. Those who may not suffer from migraines will benefit by learning the importance of diet, physical activity, sleep, and minimizing stress.

**Contents**

*Beneficially Impacting Teenagers' Knowledge and Ability to Deal with Migraines* \_\_ 3

*What is the problem and why is it an issue?* \_\_\_\_\_ 5

*Literature Review* \_\_\_\_\_ 6

*Methodology* \_\_\_\_\_ 13

*Data Analysis* \_\_\_\_\_ 14

*Results* \_\_\_\_\_ 15

*Conclusion* \_\_\_\_\_ 19

*Description and Justification of Action* \_\_\_\_\_ 20

*Action Document* \_\_\_\_\_ 21

*Critical Reflection* \_\_\_\_\_ 22

*Lessons Learned* \_\_\_\_\_ 23

*References* \_\_\_\_\_ 24

## **Beneficially Impacting Teenagers' Knowledge and Ability to Deal with Migraines**

Kristin was a junior in high school who suffers from severe headaches. Kristin's parents decided it was time to get professional advice about her headaches. After undergoing a CAT scan, blood work, and prescription medication, it was clear to her neurologist that Kristin was one of millions who suffer from Migraines. He suggested she take an injectable prescription called *Imitrex*. This was a costly prescription for her parents, but seemed to relieve the pain of Kristin's migraines. Although she still suffered for five to six days with the intense pain of the migraine, the medication would numb her from the pain for a few hours a day.

A few years later Kristin went off to college, still dealing with her migraines. It was not until she could not refill her prescription that she decided to get a second opinion from Dr. King, a highly recommended neurologist referred by the local hospital. After the traditional CAT scan, blood work, and revision of Kristin's history, Dr. King informed Kristin that her diet might be what is triggering her migraines. She was blown away by the news she never thought that her diet had anything to do with her migraines. Dr. King proceeded to explain that *tyramine*, a breakdown of amino acid in foods that are aged and fermented, could trigger migraines in some sufferers. Kristin wondered exactly how she could avoid these triggers to prevent her migraines. She was always under the impression that her migraine was primarily stress induced.

Dr. King recommended that Kristin take part in a study through CSU Long Beach; where they were studying the effects food have on triggering migraines. He was the lead neurologist guiding this study, and thought Kristin was a prime candidate. Kristin jumped on the opportunity, because in the end she had nothing to lose. The study required Kristin to avoid all foods, which contain *tyramine*. This included almost everything with a shelf life, alcohol, some produce, and foods containing high sodium. Kristin felt a bit overwhelmed by what she could not eat, but found that eating fresh and raw produce was going to be a healthy alternative.

Kristin avoided all of these foods that contain *tyramine* and felt great; she reported in a daily log what she consumed on a daily basis for three months. CSULB was able to use her daily logs in their research. After the three months Kristin was able to reintroduce foods back into her diet one at a time. For example Kristin would have avocado and see how her body reacted after a week, if there were a sign of a headache she would avoid eating avocado forever. The avocado would be classified, as a trigger for Kristin's migraines and excessive consumption would lead to a migraine.

Kristin is forever thankful to Dr. King and the study at CSU Long Beach, because she has been migraine free for the past three years. Going from suffering migraines on a bi-monthly period, to migraine free is remarkable to Kristin and her family. For a severe migraine sufferer to be rid of suffering and prescriptions is amazing. Kristin now spreads her knowledge to those around her and hopes to become dietician to help others like herself. She is currently at Loma Linda University studying nutrition and set to graduate in one year.

**What is the problem and why is it an issue?**

Millions of people nationwide suffer from migraines and are being prescribed medication to numb their pain. In my experience with working in the hospitality industry locally, I have talked to nearly one hundred people about my personal experience with migraines. I would have to say about eighty percent of the people I explain *tyramine* to have never heard of it. People deserve to know the triggers of their pain, and if they know that diet plays a huge role, maybe they can make some lifestyle changes to rid themselves of migraines.

I was a student at River High School<sup>1</sup> and suffered from migraines throughout my high school career. My migraines would last anywhere from five to thirteen days. It was sheer torture and my doctors would prescribe anything from opiates, antidepressants to injectable *Imitrex* to numb my pain. It was not until my college years that I could be rid of my migraines. An amazing neurologist informed me of *tyramine*, a breakdown of amino acid in foods that are aged and fermented that could trigger migraines. Like Kristin I underwent a study ridding my body of all foods that are aged, fermented and high in sodium. It was difficult, but I could not believe my results. I went six months migraine free, then one year, and now it has been three and a half years since my last migraine.

Within my study I hope to be able to help at least one of the students that participate in my survey at River High School. Having a migraine free life is life changing. I feel that migraines are still understudied in the medical field, and it leaves many doctors prescribing medications to numb migraine pain. Also, at the high school age there is a lot of stress and lack of sleep, which is usually blamed for migraines. These students at River High School deserve to have an alternative way to treat their migraines. It is beneficial to the students to understand their bodies and how nutrition can impact their lives. And who knows, maybe my study will impact a parent or teacher in the process.

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<sup>1</sup> All proper names are pseudonyms.

## **Literature Review**

What exactly is a migraine? It is the swelling and inflammation of blood vessels around your head. Most people consider the pain to be a severe headache, but do not realize they are suffering from a migraine attack. Recurrent headaches are not normal and are most commonly caused by migraines. A migraine is a medical condition that causes intermittent attacks of headaches and is associated with nausea and/or vomiting, sensitivity to light, sound, or smell (Foster, 2007). For some, the severities range from manageable to completely disabling. Many people have missed work, school and time in daily life due to their migraines.

### Theme 1:

The hardest part about diagnosing migraines to sufferers is that there has been only minimal research done in the medical field. Where the root of migraines are located, no one knows for sure, but the hypothalamus is the most obvious candidate. "This deep seated part of the brain controls many basic functions, including your sleep-awake cycle, hunger and satiety, hormonal regulation, and the involuntary nervous system" (Buchholz, 2002). The causes of migraines are called triggers, because they trigger the hypothalamus to react, by interfering with serotonin production, which creates synapses in the brain. Then causing blood vessels to swell creating a headache then further causing a migraine. Each individual has unique triggers, but diet is found to be a universal trigger. External triggers include: stressful events, food/drink, food additives, sleep disruption, change in eating habits, weather change, altitude change, intense heat or cold, intense light, sound, odor, overuse of medications, and drugs. Internal triggers include: hormonal changes, such as menstruation, missing meals, illness, hypoglycemia (low blood sugar), and dehydration" (Foster, 2007).

Theme 2:

Through case studies conducted by neurologists it has been found that *tyramine* is a trigger for diet related migraines. According to the National Headache Foundation (2005) defines *tyramine* as follows:

*Tyramine* is a vaso-active amino acid found in foods. It precipitates headaches in some sufferers. It is an intermediate product in the conversion of tyrosine (an amino acid present in many proteins) to epinephrine (an active hormone produced by the inner portion of the adrenal gland).

Foods that contain *tyramine* may trigger headaches in migraineurs by facilitating a chain reaction, which results in selective cerebral vasoconstriction followed by rebound dilation of the cranial vessels (the most common cause of the throbbing headache pain). This sequence of events is implicated in migraine headaches (<http://www.headaches.org/consumer/topicsheets/tyramine.html>).

I can understand how overwhelming it is to see the list of foods you are required to avoid, but it is not forever. You can slowly introduce them back into your diet by keeping a diary of foods that trigger your migraines and foods that do not seem to affect you.

**Table 1**

<b>Dietary Triggers Containing Tyramine</b>	
<b>Beverages</b>	Carob, Chocolate, or cocoa
	Diet drinks (all contain aspartame)
	Energy Drinks
	Flavored coffee/creamers
	Lemon/lime sodas
	Liqueurs
	Malt Beverages
	Sherry
	Sports Drinks with fruit triggers
	Tea - all varieties
	Wine high in tannins/that include sulfites
	Beer (especially avoid keg beer: ferments longest)



<b>Breads &amp; Cereal</b>	All containing butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT), yeast extracts, or other additives
	Croutons - unless additive free
	Doughnuts - unless additive free
	Sour dough breads
	Stuffing mixes
<b>Dairy Products</b>	Buttermilk
	Chocolate milk
	Skimmed milk
	Sour cream
	Yogurt
	Aged Cheeses including: blue; boursalt; brie; brick; camembert; cheddar; Feta; gouda; muenster; parmesan; provolone; Roquefort; Romano; stilton; Swiss
<b>Desserts</b>	All containing aspartame
	All containing chocolate
	All containing fruit triggers
	All containing nuts
	Gelatin
	Licorice
	Maple Syrup
	Molasses

<b>Fruit</b>	All over-ripe and dried fruit
	Avocados
	Bananas
	Cantaloupe
	Dates
	Figs
	Grapefruit
	Grapes
	Guava
	Honeydew Melon
	Kiwis
	Lemons
	Limes
	Mangoes
	Nectarines
	Oranges
	Papayas
	Pineapple
	Plums
	Prunes
Raisins	
Tangerines	

<b>Meats &amp; Fish</b>	Any meat or fish that contains tenderizer, soy sauce, soy products, nitrates, Or yeast extracts
	Anchovies
	Caviar
	Corned Beef
	Dried game meat
	Dried or canned ham
	Dried/salted fish
	Hot dogs
	Liver
	Meat extracts
	Packaged Meats
	Pepperoni or salami
	Pickled herring
	Sardines
	Sausage (fermented, containing nitrates and/or nitrites
	Snails
	Tuna containing vegetable broth
Cured fermented, processed, or smoked meats	
<b>Nuts, Seeds, &amp; Their Oils</b>	All nuts
	Caraway seed/oil
	Flax seeds/oil
	Peanut Butter
	Peanuts/oil
	Poppy seeds/oil
	Pumpkin seeds/oil
	Sesame seeds/oil
Sunflower seeds/oil	

<b>Sauces, Soups, &amp; Gravies</b>	All bouillon cubes and soups
	All broths (except homemade)
	All canned and bottled gravies
	All canned and bottled soups
	All bottled sauces with monosodium glutamate
	Sauces such as sweet and sour, Worcestershire, soy, & teriyaki sauce
	Ramen Noodles
	Wine Vinegar
<b>Vegetables</b>	Beets
	Fava beans
	Garbanzo beans
	Kidney beans
	Lentils
	Lima beans
	Mushrooms
	Navy beans
	Onion (except flakes and powder)
	Pickles
	Pea pods
	Pinto beans
	Pole or broad beans
	Rhubarb
	Sauerkraut

<b>Food Additives</b>	Aspartame
	Autolyzed yeast
	Beef flavoring
	Carrageenan
	Caseinate
	Corn starch
	Flavors or flavoring
	Gelatin
	Glutamate
	Guar gum
	Hydrolyzed products
	MSG
	Soy products
	Sulfites
	Smoke flavoring
	Whey or whey protein
	Yeast extract

(A collaboration: Buchholz, D. (2002) & Foster, C.A. (2007))

### Theme 3:

The Migraine disease is a serious health and disability problem that affects approximately 32 million Americans, most of whom are women, with up to 38 million Americans having Migraine genetic propensity (Coleman, 2007). It has been found in the minimal research related to migraines that genetics play a role in migraines sufferers. For most sufferers it is actually passed down through the mom's side. Hormones may be major trigger migraines in women. "Over half of women with migraine report having them right before, during, or after their period. Others get them for the first time when taking birth control pills. And some women start getting them when they enter menopause" (Basbaum, 2004).

## **Methodology**

In choosing a location to conduct my research, I decided to play it safe and go with my old high school. River High School seemed to be fitting considering their health department educates students on how to live a healthy and productive lifestyle. Having a study that ties into proper nutrition, daily activity, and mental well being, Mr. Coach was more than pleased to invite me into his classroom to conduct my research.

I introduced my study to Mr. Coach's five Health Classes and invite his students to participate in my anonymous survey. Packets containing a letter for parents, parent consent form, student assent form, and student survey were handed out. Students were asked to return the completed packets in a box labeled "MIGRAINE STUDY" in classroom 19 within five days of having receiving the packet. The survey took approximately 15 minutes to complete. This group of prospective participants was invited to participate because they may have a history of headaches or migraines.

All volunteer participants chose whether or not to participate in this research project. Those who chose to participate had a choice not to answer any questions they were uncomfortable with. No names were used to protect anonymity. Additionally, all surveys were completed in a time and place according to the student's preference.

The survey questions were as follows:

1. What do you know about headaches? What do you know about migraines?
2. What are your experiences with headaches? What about migraines?
3. What sort of patterns have you noticed with your headaches and/or migraines?
4. Do you know what might trigger your headaches and/or migraines?
5. Have you ever missed school due to a migraine or a headache? If so, how many days per year would you say you have missed?
6. What do you currently do to treat your migraines or headaches?
7. How many glasses of water per day do you drink? (Circle one) 1,2,3,4,5,6,7,8 more

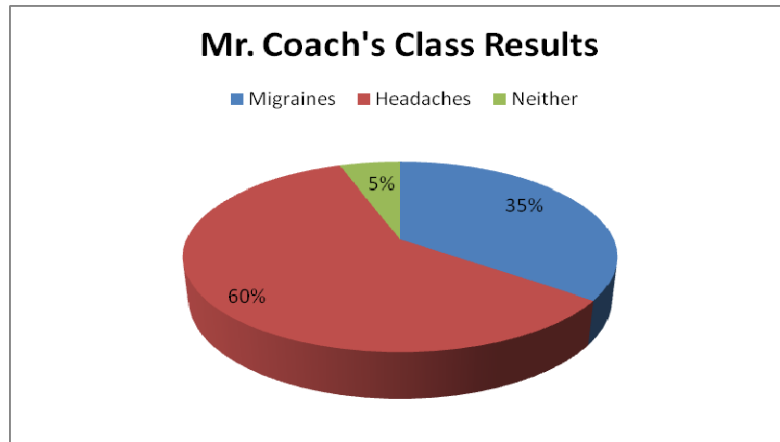
8. How many complete meals (meaning covering all major food groups) do you eat in a day?
9. How often do you eat fast food?
10. What do you usually order?
11. How much physical activity do you do weekly? 0-4 hours, 5-8 hours, 9 or more hours?
12. Does anyone else in your family suffer from migraines or headaches? If yes, who?
13. Is there anything else you'd like to say about headaches and/or migraines or their treatments?

### **Data Analysis**

All results have been transcribed by the surveys given to the students of Mr. Coach's five health classes. I have pulled out three emergent themes that display the anonymous feedback gathered from the pencil and paper survey. One hundred and twenty three surveys were given out and forty-seven were returned, from this I was able to formulate charts of my data collected.

**Results**

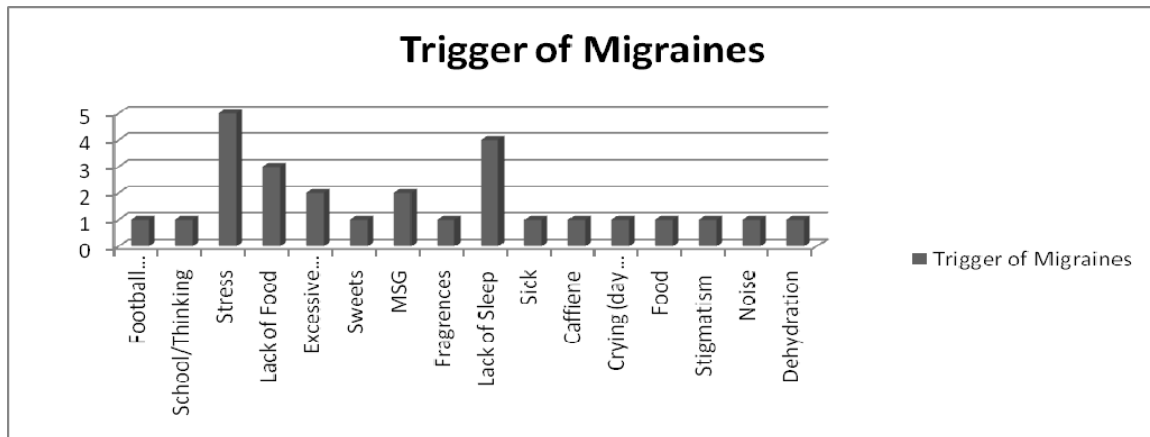
The surveys I reviewed from Mr. Coach's five health classes were astonishing, sixty percent of the 47 completed surveyors have experienced headaches, thirty five percent have experienced migraines and only five percent have never experienced a headache or migraine.



Theme 1:

The major contributors were food related, through dehydration, foods containing MSG, foods high in sugars and irregular eating habits. Which suggests that there might be some relation between migraines and proper nutrition. Some of the items such as MSG and sugary foods are listed as a source of tyramine.

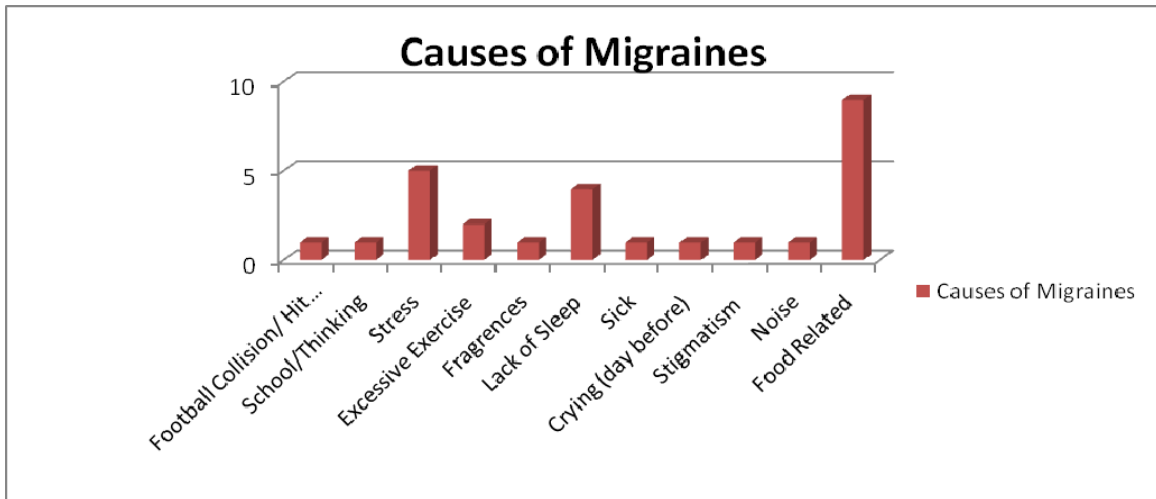
Figure 1: Complete lists of migraines triggers





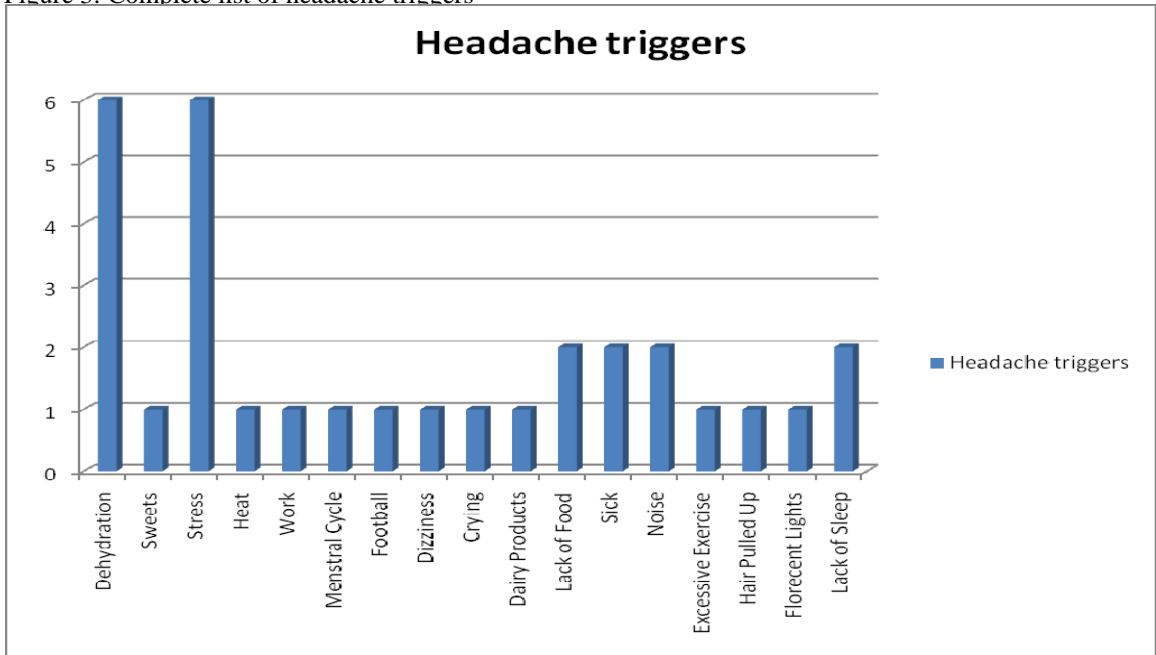
After analyzing the the migraine triggers I pooled all of the food related migraine triggers into one group. Of the forty seven surveys, thirteen suffer from migraines. The leading triggers have been identified as; lack of food, Sweets, MSG, Caffiene, Food, and dehydration are all apart of the “food related” category of *Figure 2*.

Figure 2: Consolidated all food related migraine triggers



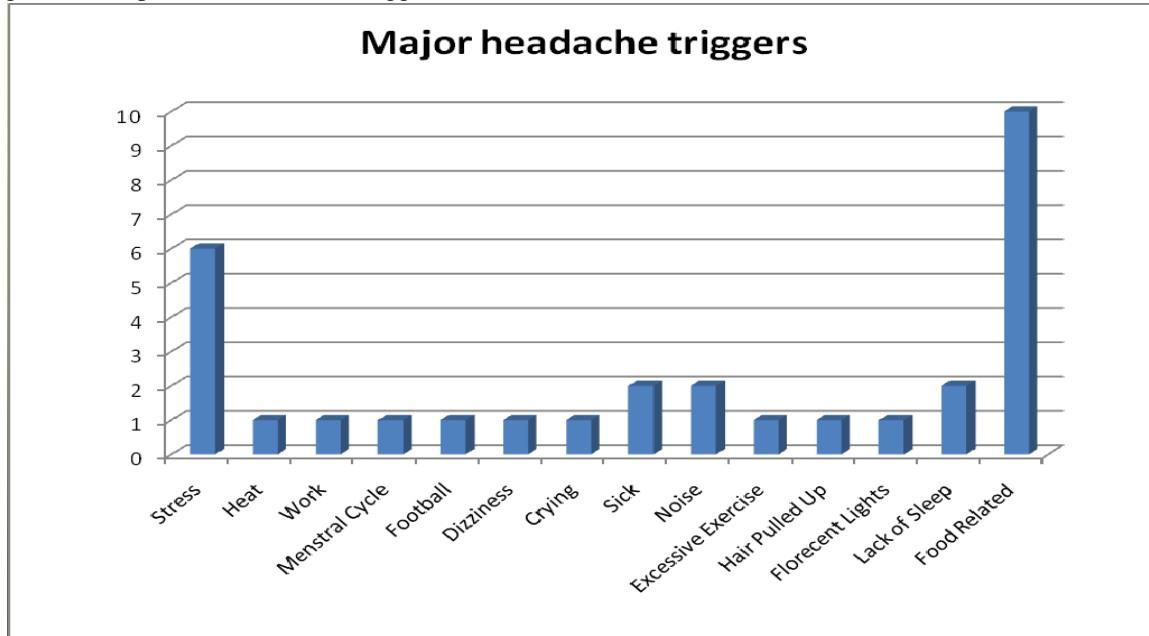
Twenty four of the forty seven survyed reported that they suffer from headaches. The triggers are shown in *Figure 3* they range from dyhydration to lack of sleep.

Figure 3: Complete list of headache triggers



The chart below is a compilation of the information in *Figure 3*, grouping all food related triggers into one category. This data helps support that nutrition is a leading trigger of headaches as well. From dehydration, sweets, dairy products and lack of food you can see that proper nutrition is very important in these teens lives.

Figure 4: Compilation food related triggers in headache sufferers.



### Theme 2:

In relation to question number 12: *Does anyone else in your family suffer from migraines or headaches? If yes, who?* I got an overwhelming response from the teens surveyed. Majority of the family members were women, from moms to grandmothers there was a significant trend pulled from the surveys I received. Proving that women must have a genetic relation to the students who suffer from migraines and headaches.

In *figure 5*, you will see the dominance of women who suffer from migraines. 44% being mothers, 6% from aunts, and 11% from the grandmothers, all totaling 61% of family members listed in the surveys that suffer from migraines.

Figure 5: Data collected from survey question 12.

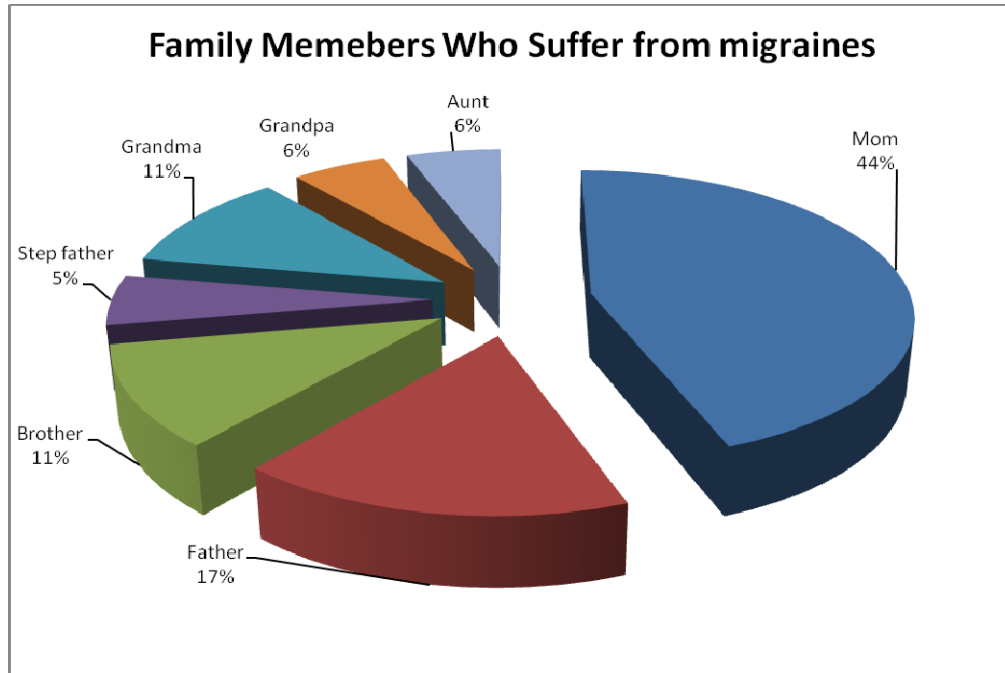
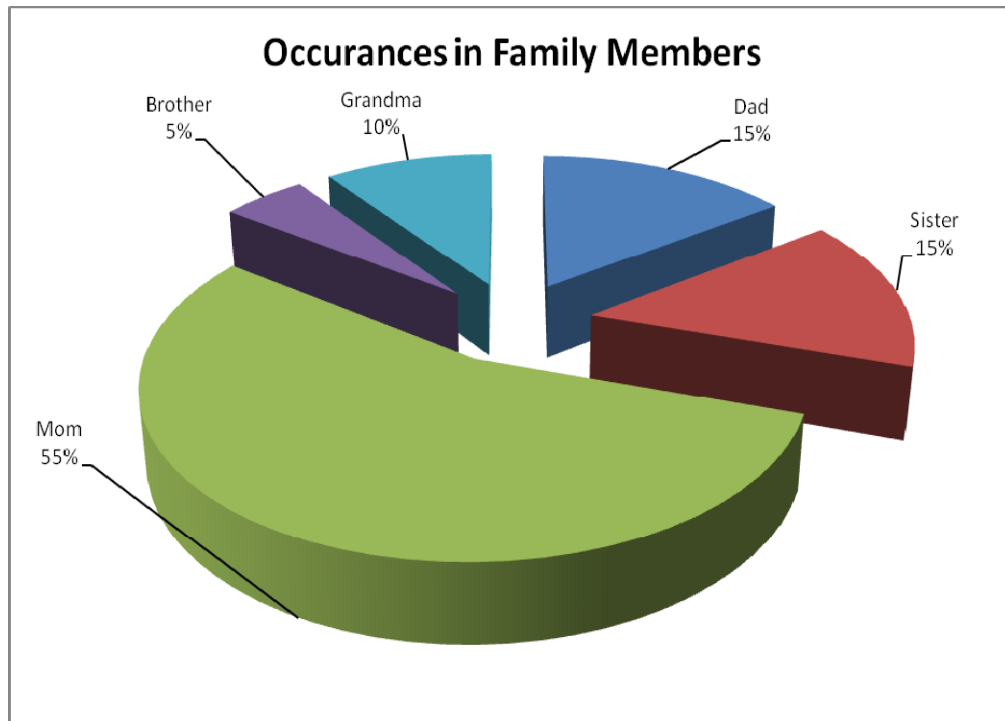


Figure 6 is examples of how many women suffer from headaches within the surveyed teen's family members. 55% were mothers, 15% sisters, and 10% grandmothers, who suffer from headaches. Proving

Figure 6: Occurances of headaches in the surveyed family members.



## **Conclusion**

In conducting this survey I learned a lot about teens that suffer from migraines and headaches. Of the 47 surveys returned only two had never experienced a headache or migraine, which was a surprise. I thought the number of sufferers would be much smaller in number. This made me feel as if I really made a difference in these teen's lives. The feedback I received from the students in Mr. Coach's health classes at River High School was absolutely perfect in relation to my project.

There is something to be said about this age group and their need for positive enforcements, which I feel I provided. Not only were the sufferers informed that nutrition can be used as an alternative way to manage their headaches and or migraines, but those who have never experienced the pain of a headache or migraine, got a chance to understand what their peers have experienced. It was great to be able to talk to the teens about nutrition and my own personal experiences with suffering from migraines. The parents even contacted me in relation to the survey, asking for a copy of my final paper so they can get a better understanding of food related migraines and headaches.

I feel that I was able to make a difference and for that I am forever grateful.

**Description and Justification of Action**

Being that there were a large number of students in Mr. Coach's five health classes who suffer from headaches and migraines, I thought it fitting to make a pamphlet available for the students. To keep anonymity I will place the pamphlets in Mr. Coach's classroom at River High School. The pamphlet will explain what a migraine and headache is, what a trigger is, a list of foods containing tyramine, and a few tyramine free recipes. This will help keep the information organized and readily accessible to the students.

Mr. Coach has also asked me to present my research and my experience to all five of his health classes. It will be fitting because at the time he has asked me to present, the students will be a week into their nutrition segment of his class. I will take questions from the students to help clarify what my research was for. Also, to help the students understand how important nutrition is in everyday life.

**Action Document**

As an action, I was able to make a pamphlet for the students in Mr. Coach's health classes. The pamphlet is attached as *Appendix A*, providing information on what a migraine or headache is, what triggers are, a list of foods rich in tyramine, and helpful tyramine free recipes. The pamphlets are available for the students in classroom 19 of River High School. I have already printed out a third batch for the students because they have been a popular item in Mr. Coach's classroom.

In addition to the pamphlets Mr. Coach asked for me to speak to his five classes about my experiences with migraines along with sharing some of the data collected. It was a great experience for me to meet the teens face to face and be able to answer questions that they had.

### **Critical Reflection**

Throughout my experience with my action taken I would like to have a little more information on the pamphlet and perhaps made a booklet of information for the students. Having the restrictions of time against me I felt I got a lot of great information. If I were to redo this project I would give out two sets of surveys, one about headaches and another about migraines to get a little more data.

My site, River High School, was perfect for this project, being that it is where I graduated from in 2000. The faculty was helpful and the principal was great to work with. The response I got on the surveys was very helpful in finding results. The students were very articulate in their answers, which made analyzing the data easy.

Overall, I had a great experience with this project and I look forward to pursuing my career in nutrition. It was rewarding to teach the students of River High School about migraines and headaches, along with nutrition. This was an unforgettable and rewarding experience for me.

## **Lessons Learned**

### **MLOs I Met:**

- **Knowledge of life long learning**
- **Natural Science**
- **Human Development**
- **Physical development and health**

**Knowledge of life long learning:** Through my experience with this project I have learned a lot about my peers and myself. Multiple people have recommended that I write a book on the topic of food related migraines, because of my insight and experiences. It has been nothing but positive and I look forward to getting a doctrine in nutrition, just so I can make a difference.

**Natural Science:** Nutrition is a passion of mine and in doing this project I was able to have a hands on experience in doing my surveys. To be able share my knowledge with the students of Mr. Coach's health classes, was a chance for me to describe the anatomy of migraines and headaches and how tyramine can make a negative impact in those who suffer from headaches and or migraines.

**Human Development:** It was interesting for me to be able to explore the genetic impact of headaches and migraines. I had never looked into family members as a means to understand where migraines and headaches may come from and why some people do not experience them.

**Physical development and health:** I have learned that physical development is a large part in women who suffer from migraines and headaches, due to minstrel cycles and the hormones released. To be able to listen to your body and avoid triggers is a great lesson learned it is important to live a healthy lifestyle, with proper diet and exercise.



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# **Appendix A**