

Experiencing the Mediterranean Diet Abroad: An Observational Study into the Health Benefits
of the Mediterranean Diet and Creation of MyTable

Submitted by

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Abstract

The observational study completed in Volterra, Italy, in regards to evaluating the Mediterranean diet implemented in this specific region, aided in the creation of MyTable, a meal diagram that will help American's eat healthier, balanced meals. This study began by comparing researched statistics on Italy and the United States, and took into account the results found from personal implementation of both Mediterranean and American diets. The purpose of this study was to help solve questions about the effectiveness of the Mediterranean diet left unanswered by other research studies, and help transfer key elements into a feasible plan for Americans to follow, called MyTable. The results collected abroad have supported the fact that a diet following the Mediterranean diet guidelines, explained by the World Health Organization and Food and Drug Administration, can result in increased overall health of a population. Collecting statistics of life expectancy, prevalence of chronic diseases, and popularity of fruit and vegetable intake provide evidence of its advantages. MyTable will represent the beneficial patterns and habits as observed personally and objectively in varying Italian populations and geographical regions traveled to, throughout six weeks abroad. Weakness of this study includes the method of observation. It is important to keep in mind that these results cannot assume causation, but show a correlation that is open to confounding factors. Nevertheless, a link is evident between following this diet and improved health. In conclusion, MyTable pictorially helps Americans experience the Mediterranean diet, as it aims at improving health while decreasing incidence of non-communicable diseases seen in the United States.

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Background Research and Analysis

It was imperative to gather data on both Italy and the United States before conducting observational research. Marketline, World Bank, Eurostat, GMID, Demographics Now, and American Fact Finder were all utilized to create support for the importance of evaluating Italian diet and lifestyle in hopes of finding key factors that play a part in improving their health and quality of life. Statistics and data collected on Italy and the United States, such as average life expectancy, created a basis for observational research. Using the average life expectancy is a good indicator of the overall health of that country. As of the year 2015, the average life expectancy in the United States was 79 years (World Health Organization, 2013). Compared to Italy's 83 years, the question was asked: What factors are improving the life expectancy in Italy?

Looking at the overall usage of healthcare and access to such services, in Italy and the U.S., census data, for 2012, showed Italian households spend dramatically less on healthcare than Americans (Figure 1). The data represents the monetary value spent on healthcare by those

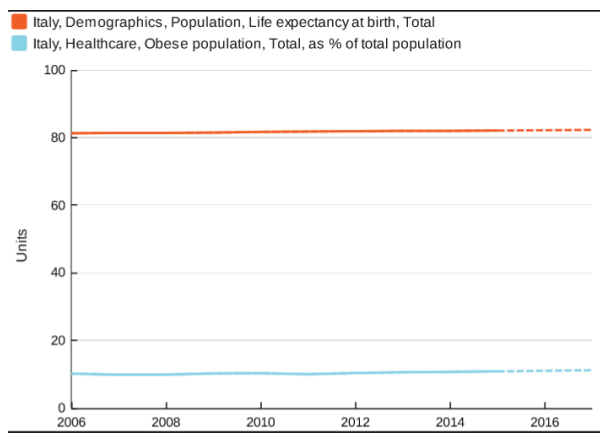


Figure 1: Life Expectancy in red; Percentage of health care spent in obese population in blue. Data from 2016.

classified as obese. Even in obese populations, Italians spend less on healthcare than the United States'

healthy population. Care costs less in Italy, as well.

“The Italian Republic safeguards health as a fundamental right of the individual and as a collective interest, and guarantees free medical care to the

indigent.’ With a national health care card, citizens are able to visit a doctor without paying any fees” (Steeves,

2014). Examining the cost for a cardiac catheterization in both countries illuminates the

healthcare disparities between both. Cardiac catheterization is a common procedure to reduce atherosclerosis in an effort of preventing other cardiovascular complications from happening. On

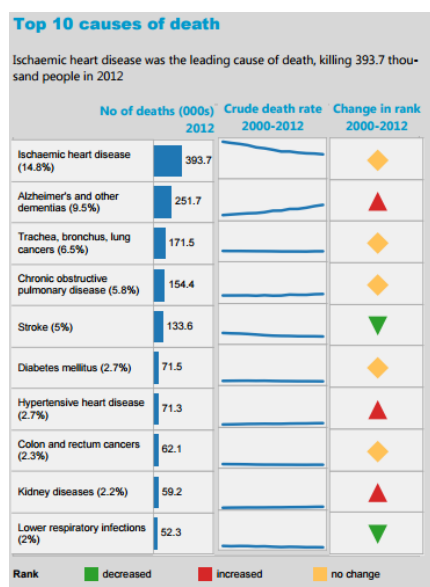


Figure 2a: Top 10 causes of death in the United States. Updated in 2015.

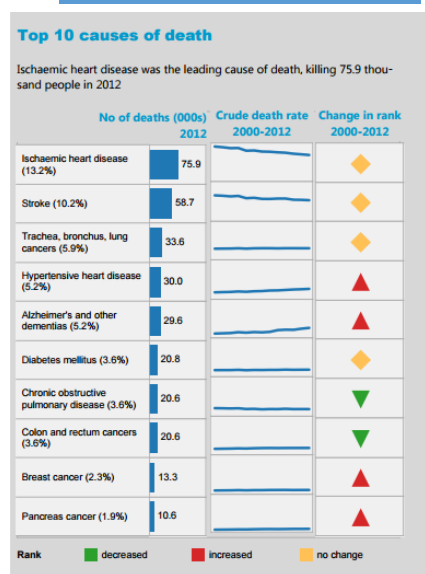


Figure 2b: Top 10 causes of death in Italy. Updated in 2015.

average, this procedure would cost around \$1,000 in Milan, Italy.

This is compared to \$7,000 to \$11,000, depending on what side of the heart is done, in the United States (PlacidWay, LLC, 2007). Italy and the U.S. both have access to healthcare services, yet one suffers from more preventable diseases than the other.

Non-communicable/lifestyle diseases are higher in the U.S. and are still on the rise (Experian & Alteryx, Inc., 2017). This leads to the assumption that Italians have higher quality of health and

therefore do not cause a rise in healthcare spending (Samieri et al, 2013). The next area of interest, then, was what Americans and

Italians were eating and how much physical activity they were achieving on a daily basis. The top 10 chronic diseases prevalent in both countries include some of the following: ischemic heart disease, stroke, Alzheimer's, respiratory diseases, type 2 diabetes, and breast/prostate cancer. Both countries experience these disease, but the major difference is in the amount, in thousands, of people who are diagnosed as of 2012. Looking at Figures 2a and 2b, from the World Health Organization [WHO]

website, Americans experience ischemic heart disease at a higher percentage than Italians do (World Health Organization, 2013). The

graphs also depict a rise in hypertensive heart disease for both countries. This can be in part

because of the Americanization of Italians' diets. In the past 5 years, Italy has seen a slow growth in fast food restaurants by 6.6%. This is compared to the growth of fast food restaurants in the U.S., in the same time frame, of 14.7% (Italy Statistics, 2016). Although there was an increase of restaurants in Italy, the locations are only concentrated at airports, railway stations, and large cities, which limits easy access, unlike in the U.S.

It was then important to look at fruit and vegetable intake in both countries, to determine if Italians were excelling as assumed. The average monetary value spent on fruits and vegetables per household versus the amount of money spent on fast food was substantial. If one consumes more fresh fruits and vegetables, over fast food which contains high amounts of saturated fats, a trend of lower rates of chronic disease would be explained. The Italian fruit and vegetable market grew by 1.7% in 2014 and is estimated to grow by 12.4% by 2019 (Italy Statistics, 2016). This is consistent with following the Mediterranean diet, which emphasizes a high intake of fresh, whole fruits and vegetables. While in the U.S., the fruit and vegetable market increased by 2.5% in 2014 and is estimated to increase by 11.5% by 2019. Although both countries are close in percentages, it is vital to keep in mind the geographical size difference between Italy and the United States. Italy's fruit and vegetable market increase is more significant than the increase in the U.S. when taking into consideration the ratio of percent increase and surface area. This is supported by looking at per capita values. Italy's fruit and vegetable consumption per capita, in 2015, was 130.6 kg (Italy Statistics, 2016). Comparing to the U.S., which has 31 times more square kilometers of land area than Italy, per capita is 697 kg (Produce for Better Health, 2015).

Another area of concern, in America, is the high incidence and prevalence of obesity coinciding with high BMI. 35.7% of the United States' population was obese, as of 2010, and has increased steadily over the last seven years (Ogden, 2012). This is compared to Italy's obesity prevalence of 19.8% in 2014. There has been a very slight increase in this percentage over the previous 9 years, but is significantly less than America (World Health Organization, 2013). Italy also has one of the lowest amounts of obesity, looking at Figure 3, when compared to other European countries, specifically those that do not follow the Mediterranean diet (Figure 3).

	Underweight	Normal	Pre-obese	Obese
European Union (28 countries)	2.8 (%)	47.0 (%)	34.8 (%)	15.4 (%)
Belgium	3.3	48.8	34.2	13.7
Bulgaria	2.6	44.6	38.4	14.4
Czech Republic	1.3	43.3	36.7	18.7
Denmark	2.9	51.1	31.6	14.4
Germany (until 1990 former t	2.4	47.0	34.3	16.4
Estonia	2.7	45.0	32.6	19.7
Greece	2.3	42.2	38.6	16.9
Spain	2.6	46.4	34.8	16.2
France	4.2	50.3	30.8	14.7
Croatia	2.3	41.9	37.8	18.0
Italy	3.7	52.5	33.3	10.5
Cyprus	4.3	49.2	32.6	13.9
Latvia	1.9	42.9	34.4	20.8
Lithuania	2.4	44.3	36.7	16.6
Luxembourg	3.2	50.4	31.3	15.1
Hungary	3.4	42.6	33.3	20.6
Malta	2.4	38.0	34.4	25.2
Netherlands	2.3	50.0	34.8	12.9
Austria	2.7	50.4	32.6	14.3
Poland	2.9	43.8	36.6	16.7

Figure 3. European countries' weight classification in percentage. Retrieved from Eurostat.

Physical activity varies drastically between the United States and Italy considering the percentage of individuals meeting the requirements set by each government respectively. Both countries have similar recommendations. "The country has adopted national recommendations, using the cut-off points for adults reaching the recommended physical activity levels as defined by the United States Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM)" (World Health Organization, 2013). The number of youth meeting the physical activity requirements acts as a good indicator of the overall success of the population (World Health Organization, *Italy Physical Activity Factsheet*, 2013). Statistics, from 2012, depict youth, ages 12 to 15, in the United States, only meeting the physical activity recommendation by 25% (Fakhouri et al, 2014) (Figure 4). This compares to the data, for a similar age range in Italy, of 43% meeting the recommended goal for physical activity (WHO,

Italy..., 2013) (Figure 5). Italians are taught in school, at a young age, the importance of physical activity. Schools require a minimum of 2 hours of Physical Education classes per week. In addition to classes, they are encouraged to join the PIEDIBUS, aka “walking bus,” which replaces the use of vehicle transportation. Volunteers walk students from home to school and back again; and while this is used for younger children, as they get older, youth are more likely to walk to school and other places instead of using public transportation (WHO, *Italy...*, 2013). In the United States, the National Association for Sports and Physical Education recommends elementary schools to provide 20 minutes of recess daily and 150 minutes of Physical Education (PE) per week. Unfortunately, recess and PE decrease in prevalence as children move into higher grade levels (Centers for Disease Control and Prevention, 2014). Americans also rely on buses and cars to get to and from school, due to the distance between home and school. Trends show a decrease in physical activity due to technology and media in both countries, but it is more extreme in the United States.

Prevalence (%) of children and adolescents reaching the recommended physical activity levels, 2010-2013

%	CHILDREN AND ADOLESCENTS (6-17 YEARS)
MALES	46
FEMALES	44
BOTH SEXES	43

Figure 5. Physical activity % (Italy) from WHO.

Percentage of youth who were physically active, by number of days per week and sex: United States, 2012

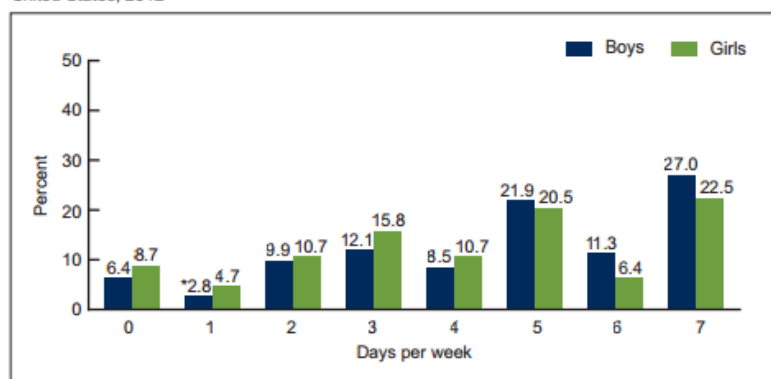


Figure 4. Physical activity % (U.S.) from WHO

Using this background information fueled the hypothesis that Italians are achieving a higher quality of health from their culture, which focuses on diet, physical activity, and social relationships. “Italians unconsciously follow the parameters of the Mediterranean diet and a lifestyle that includes traditional and family aspects” (Edelstein, 2001). Thus, the hypothesis that the Mediterranean diet is a more healthful way of eating and living, compared to the American diet, is grounded. This can be seen with the data that shows Italy surpassing the United States in life expectancy while having depressed rates of infant/maternal mortality, obesity, and deaths per year (World Health Organization, 2012). Through my observational research, I find that this statement is true.

Definitions

Before going abroad, it was essential to establish uniform definitions of the terms and values that were going to be observed and measured. The main health components of this study, that needed to be defined, include: physical activity, portion size, serving size, the Mediterranean diet, the American diet, weight/BMI classifications, and the definition of health.

- American diet: The American diet, also called the Standard American Diet (SAD), “includes excess consumption of calories from refined carbohydrates, fatty meats, and added fats that lacks many nutrients found in whole grains, fruits, and vegetables” (Grotto & Zied, 2010). This diet, which has excess sodium levels, can be seen as the cause for the increase in chronic diseases stemming from obesity and atherosclerosis. It also includes “a greater abundance and accessibility to calorie-dense and nutrient poor food and beverage choices” (Grotto & Zied, 210).
- Mediterranean diet: The Mediterranean diet is a “lifestyle --- including foods, activities, meals with friends and family, and wine in moderation with meals” (Oldways, n.d). This

lifestyle also includes regular, daily physical activity. Plant foods are emphasized (fruits, vegetables, bread, potatoes, beans, nuts, and seeds) and limited traditional desserts; fresh fruit replaces this. Olive oil is the main source of fat and red meat is consumed in low amounts (Willett et al., 1995).

- Physical activity: Physical activity is described as “movement of the body that uses energy” and “for health benefits, physical activity should be moderate or vigorous intensity” (Choose MyPlate, 2015). Examples of moderate activity include walking briskly, cycling, gardening, etc. Vigorous activities include running/ jogging, walking very fast, swimming, aerobics, etc. It is also important to note that only moderate and vigorous activities help individuals meet their physical activity needs (Choose MyPlate, 2015).
- Serving size: A serving size, according to the FDA, is “based on the amount of food that is customarily eaten at one time” (FDA, 2016) and “contains the quantity of nutrients listed on the Nutrition Facts Label” (USDA Center for Nutrition Policy and Promotion, 1999). This is a standard amount that is regulated.
- Portion size: A portion size is the “amount of a specific food an individual eats for dinner, snack, or other eating occasion” (USDA, 1999). This is not standard and is not regulated. It can be affected by outside factors.
- Weight (BMI classifications): The BMI classifications, from the WHO, are as follows:
 - Less than 18.5 is considered low/underweight.
 - Between 18.5 and 24.9 is considered average weight.
 - Between 25 and 29.9 is considered overweight.
 - More than 30 is considered obese.

(World Health Organization, 2012)

- Health: Health “is measured along a spectrum ranging from severe disability to high energy level with absence of chronic conditions or symptoms” (Belloc & Breslow, 1972). Being of good health is maintenance at the high energy level of the spectrum, which is obtained from practicing positive health behaviors. For example, refraining from smoking, drinking alcohol, receiving enough sleep, regularity in eating, and getting physical activity.

Observations and Data Collection

Prior to the 6 weeks abroad in Italy, weight, diet, and physical activity evaluation was taken for myself. My starting weight was 135.6 pounds. Physical activity included walking (on

campus) and 15 minute daily work outs at home. I evaluated

myself as not meeting the goal of 150 minutes of moderate

physical activity set by various organizations, including the

Dietary Guidelines, MyPlate, and Health People 2020. This was

partly due to my busy schedule of classes and working two jobs.

As a Health Science major, I believe my diet was adequate in

achieving the recommended quantities of each food group

depicted with MyPlate (Figure 6), but I knew there was room for

improvement. As seen in my food logs, which exhibited my

average daily food intake, I was eating adequate amounts of fruits

and vegetables, but was lacking in dairy, whole grains, seafood, and

water intake. I also evaluated my blood glucose levels. I used a

Subject Food Log

Subject Name: Anna W. Wiesener

Date: 5/25/16 (Wednesday)

Trial: 1

Date of Trial: 5/25/16

Food/Drink Item Consumed	Amount of Food/Drink Consumed	Ingredients in Food/Drink Item	Time at which Food/Drink was Consumed	Location at which Food/Drink was Consumed
Coffee	12 oz.	n/a	9:30 am	Home
Vanilla Pudding	1 oz.	sugar, cream	" "	" "
Fruit & Yogurt	1.5 cup			
Milk	0.5 cup	1%	" "	" "
Salad	3 cups	spinach, tomatoes	1:00 pm	Restaurant
Pasta	1/2 cup	n/a	" "	" "
Salmon	1 cup	broccoli, cheese, milk, carrots	" "	" "
Water	16 oz.	after workout	" "	" "
Apple	1 medium	Golden Delicious	4:00 pm	Home
Pretzels	1/2 cup	salt, peanut butter	4:30 pm	Home
Wheat Bread	1 slice	n/a	6:30 pm	Home
Cream Soup	1/2 cup	Tomato, Milk	" "	" "
Pasta	1/2 cup	n/a	" "	" "
Fruit Salad	1/2 cup	lemons, oranges, grapes, kiwi	" "	" "
Yogurt	1/2 cup	fat free, strawberry (in fruit salad)	" "	" "
Water	16 oz.	n/a	" "	" "
Choc chip cookie	1, small	chocolate chips, flour, sugar, butter	8:00 pm	Home

Figure 6. Food Log while in the United States.

blood glucose monitor to test my glucose levels as I had to manage my type 1 Diabetes. I then planned on testing my levels before each meal in Italy, as I had in the U.S. Hoping to improve my overall health with the Mediterranean diet, I left for Italy.

Volterra, Italy, which is in the heart of Tuscany, was the basis for my observations. I also collected data from larger cities, such as Rome, Venice, and Naples, to make sure I was gathering representative data from both rural and urban areas of Italy. My observations pertained to accessibility and utilization of fresh, healthy foods, physical activity, and the social aspects of Italian meals. I made note of the beneficial practices and habits that exhibited the Mediterranean diet and the health-damaging properties that are contributing to the rise in chronic diseases such as cancer.

I evaluated the Mediterranean diet, in Italy, by following the guidelines put in place by the World Health Organization User Guide in 2012. The recommendation of eating the same percentage of fresh fruits and vegetables as grains was easy to implement. Volterra, and in every other city I visited, had a market on Saturday mornings, where farmers and local businesses sold



Images 1, 2, 3. Market day in Volterra, Italy.

fresh produce, homemade bread, cheeses, hard meats, sausage, fish and seafood, and eggs.

These markets were always crowded, as the community shopped for their weekly meals. As

shown in the pictures above (Images 1-3), not only was it a weekly necessary activity, it was

also a social gathering and form of physical activity. Along with these markets, locally owned

shops, such as the pasticceria, macelleria, and pescheria, sold

bread, meat/seafood, dry pasta, olive oil, etc. during the rest of

the week. These stores contained fresh fruits and vegetables

brought in every morning from the local farms

outside the city walls. All stores were within

walking distance, which made getting fresh

food, every day, more convenient. The prices of

food also made eating healthy

more attainable. As seen in

Image 4, the receipts for my

Image 5. Largest sized bowl available from supermarket, Conad.

shopping trips cost no higher than 17 euros, equivalent to 18.25 dollars at the current exchange

rate in January 2017. For less than three euros, I was able to get vegetables, bread, and meat for

the week. This theme of affordable, fresh food was witnessed in local shops,

restaurants, and supermarkets. There was only one chain, supermarket store,

Conad, outside the city walls. Conad sold fruits, vegetables, frozen pastas, deli

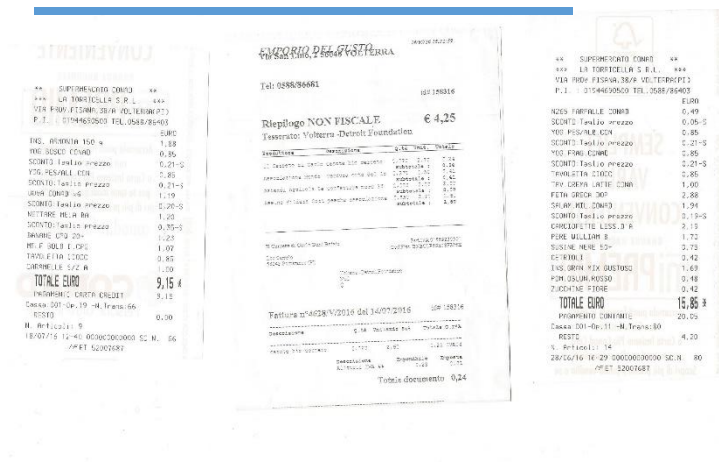
meats, canned and boxed foods, and dairy products. This supermarket was not

as accessible as the shops in town, and thus not utilized as much. Most people

went to Conad for non-perishable items and non- food, household related

items. Contrary to produce in American supermarkets, fruits and vegetables

Image 4. Receipts for groceries, including fresh fruits, vegetables, & meat from various shops in Volterra.



were larger, more vibrant in color, and overall tastier. The size of servings in packaged foods and at restaurants also differed between the countries. The largest sized personal dishware (plates and bowls) were equivalent to the U.S.'s mediums (Image 5). As a result, Italians ate less at meals. The meals that were served and prepared, in Volterra, and cities like Naples, Siena, and Florence, lasted longer, contained more healthful options, and always included multiple people. A typical meal, either out at a restaurant or at home, lasted, on average, 2 hours. This is due to a slower pace of eating and spaced out courses. This is a beneficial habit because it encourages mindful eating, which is paying attention to satiety cues as leptin levels increase. Also, meals are a time for social interaction. Studies show that eating with friends and family lead to more healthy eating habits and prevention of overeating. "Frequency of family meals was positively associated with intakes of fruits, vegetables, grains, and calcium-rich foods and negatively associated with soft drink consumption. Positive associations were also seen between frequency of family meals and energy, protein, calcium, iron, folate, fiber, and vitamins A, C, E, and B6" (Story, 2005). Although breakfast and lunch were small meals, Italians tended to gather at the bar and socialize over a quick cappuccino and pastry in the morning and a panino in the afternoon. Emphasis was put on the noon meal and dinner. Shops would close between 1pm and 4pm so that people could go home and eat the meal with their families. Stores would then close again at 8pm for the day. I would visit the shops to purchase fresh bread and vegetables around 5pm and prepare dinner with the girls that I stayed with. Meal preparation was a group effort and was an enjoyable way to learn how to cook new dishes from others. I was informed this was how mothers and grandmothers passed down recipes to their family members, keeping the tradition of eating healthy meals. If we did not cook dinner, we went out to one of the many



Image 6. Dinner at Nanni's

parameters of the Mediterranean diet more effectively. As a result, Italians have improved health compared to Americans.

dining restaurants. There were many different options to choose from and we could expect to be served homemade pasta dishes, pizza, and meat dishes (Image 6). With easily accessible, healthy food and tradition of eating with others, Italians follow the

The key foods of the Mediterranean diet that I witnessed while in Italy included the consumption of olive oil, seafood, fruits and vegetables, grains, and wine. Olive oil was the main source of added fat in meals. It was used to cook vegetables, added to pasta dishes, used as a dressing for salad (along with balsamic vinegar), and eaten along with bread. Vegetables were common side dishes and additions to pasta dishes. Salads were a common first course, and while cooking at our house, we always made a salad to go with our meal. As expected, there was a high prevalence of tomatoes, whether they were used as the main component of sauces or eaten as a salad (insalata pomodoro). Artichokes were also a customary addition to pizzas, pastas, and salads. Fruits, on the other hand, were frequently consumed as desserts. Wild berries were added to sweets, such as gelato and mousse. It was also popular to eat a piece of fruit during breakfast. I followed this trend by eating a piece of fruit with yogurt and espresso for a typical breakfast.

Italians also eat more seafood, including fish, than Americans. Michigan and Italy are both peninsulas, with access to fish and yet, according to my food logs, I only ate fish once a week at most. While in Italy, it was easier to eat the recommended 2 servings a week due to the addition of shrimp, calamari, and redfish to pasta dishes. Restaurants that solely served seafood existed in cities such as Florence, Venice, and Naples. The Mediterranean diet's recommendation of 2 servings of high fat fish and seafood, such as tuna, salmon, herring, and sardines, was easy and delicious to attain (World Health Organization, 2012).

As mentioned previously, grains were abundantly available through bread, pastries, and pastas. The Mediterranean diet suggests that one should consume 6 servings of grains per day and of those servings, most should be considered whole grain/wheat (World Health Organization, 2012). Unlike in the United States, grain products such as cereals, bread, and pasta, are not refined or bleached (Images 7 & 8). The process of making pasta and bread is important to Italians and one can know that the bread they bought at the pasticceria was handmade. Dry pasta was advertised as whole grain along with loaves of ciabatta and focaccia.



Images 7 & 8. Ingredients to make bread (pan) (left) and dry pasta (right).

According to the Mediterranean diet guidelines, set by the WHO, red meat consumption should be very low, only eaten several times a month. Instead, fish, poultry, and legumes should be increased and eaten every day. In Italy, specifically, chicken, pork sausage, and wild boar (cinghiale) were present in many dishes. Ravioli and other stuffed pastas included lobster, other seafood, and cinghiale. Red meat was scarce besides the thin salame hard meats. Tripe is also a delicacy of Italy. Tripe is the lining of specific animal stomachs, including beef. It is very high in vitamins and minerals: selenium, zinc, vitamin B12, amino acids, and is high in protein with 10 grams per 3 oz. serving (Papa et al, 1997). It is also high in iron which helps combat iron deficiency, along with consuming seafood, in the Mediterranean diet.

Lastly, Italians drink wine in moderation. According to the Mediterranean diet, 1 to 2 glasses of red wine, a day, contains health benefits. Wine consumption is easily achieved in Italy, specifically in Tuscany. It is the preferred drink with dinner, along with Sambuca and Lemoncello, which are spirits that claim to aid in digestion. Wine is also inexpensive, priced between 2 and 7 euros per bottle. The legal age for drinking is 16 years, but adolescents as young as 13 years are allowed to drink wine with a meal. The concept of consuming things in moderation is also practiced regarding desserts. Gelato, pastries, mousse/panna cotta, and chocolate are common types of sweets. Although baked pastries are eaten for breakfast, they are usually unsweetened because they are eaten along with espresso. Sweet pastries are reserved for Sundays, after church. Pasticcerias bake fresh pastries early Sunday mornings, following tradition. Gelato is also available, although through my observations, the majority of consumption is from tourists. In my interpretation of the diet guidelines, I reserved a sweet pastry for Sundays and indulged in one scoop of fruit based gelato once or twice a week. The gelato varied in flavors, but most were made from fruit and nuts, such as pistachio and hazelnut

(niccola). Replacing chocolate with niccola spread, in pastries and gelato, was also very popular.

This is advantageous due to the antioxidants that are found in nuts, including hazelnuts.

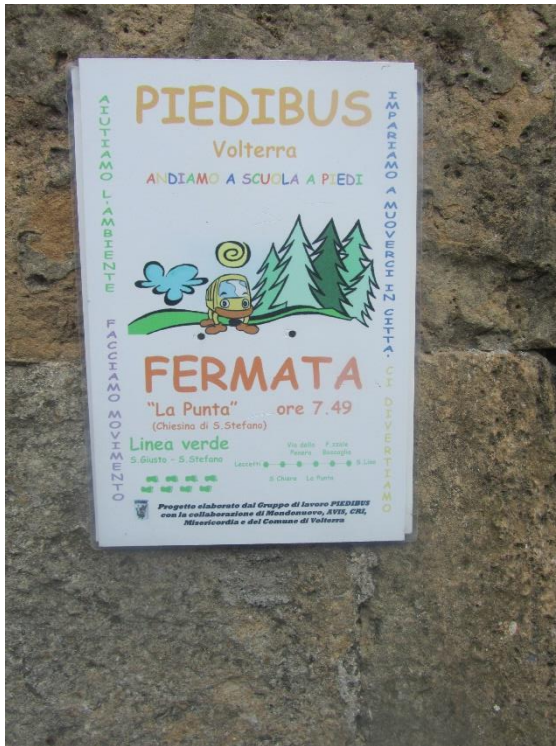
“Hazelnuts, almonds, Brazil nuts, macadamias, pine kernels and cashew nuts also contained significant amounts of total antioxidants (i.e. 0.3– 0.7 mmol/100 g)” (Blomhoff et al, 2006).

These antioxidants combat oxidative stress which is shown, with increasing evidence, to cause heart disease and cancer. In addition to antioxidants, nuts also provide fats and protein without high amounts of cholesterol. Pairing nuts with sweet, sugary foods help lower the glycemic index of that food and adds nutrients to something considered innutritious (Blomhoff et al, 2006).

Therefore, the Mediterranean diet is adhered to, observing the diet of Italians in Volterra and other various cities in Italy, along with assessing the availability, quality, and size of produce and portions.

Another aspect of the Mediterranean diet focuses on regular physical activity. Personally, meeting the physical activity recommendation of 30 minutes of moderate activity everyday (World Health Organization, 2012) was easily achieved, without taking into account the walking done for tourist activities. On average, I completed 8 miles of brisk walking per day, as tracked with a FitBit. The terrain of Italy, especially in Tuscany, is very different from Michigan and the majority of the United States. The landscape is very hilly and this is to the advantage of Italians. Many do not own cars and so walking and public transportation, where bus stops were placed in several spots inside and outside of the city walls, are the most common forms of transportation. Considering Volterra was situated on a large hill, walking throughout the city was always uphill or downhill. Residents would fulfill the physical activity recommendation by walking their dogs, pushing strollers, riding bikes, and carrying groceries home on a daily basis. This was not limited to any specific age range. Young children and the elderly could be seen actively walking to

shops, church, and school. As mentioned in the background data, the PIEDIBUS (Image 9) was



the popular way for school-age children to accomplish the 60 minutes of physical activity per day, as set by the WHO guidelines for the Mediterranean diet (World Health Organization, 2012). Children could safely walk to school, which was located outside of the city walls, and

back home, while

Image 9. Advertisement for the Piedibus in Volterra, Italy receiving physical

education classes during

school. Due to the lack of space, buildings were built up, with multiple floors and without elevators. Walking up

multiple flights of stairs to come and go was also accounted for. My individual evaluation of physical activity also included weight measurements. My weight was taken on June 8, 2016 (prior to trip) and was measured on August 3, 2016 (post trip). This was to assess an average on weight maintenance and/or loss. My weight prior to the trip was 135.6 lbs. which was compared to my weight post trip which was 130.2 lbs. That constituted a weight loss of 5.4 lbs. during 6 weeks of following the diet and physical activity advised by the Mediterranean diet. With personal reflection, through journal entries, I also noticed I had more energy and the climbing and walking became easier. In addition, there was also less temptation of eating fast food. There were only 3 fast food chains that I observed throughout Italy. Those included McDonalds, Burger King, and Subway. These restaurants were only found in large, tourist cities such as Rome and Naples. The menus at these fast food restaurants were very different from those in the United States. There were less options, smaller portion sizes, more healthful ingredients, and

more expensive prices (Image 10). For example, at McDonalds, there were only 4 types of soft drinks to choose from, along with tea, orange juice and water. There was a large selection of salads, which were offered as sides, and the McVeggie burger was a popular item. They feature more chicken burgers and sandwiches than beef, also. Fruit side options included kiwi, grapes,



*Image 10.
McDonald's menu in
train station in
Naples.*

peaches, and apples. Fries and baby carrots were offered for vegetable sides. To deter frequent consumption of fast food, prices were much higher. The fast food chains did contain a 1 euro menu, but sandwiches and meals were priced around 8 to 9 euros (equivalent to \$8.55 to \$9.62 USD). Therefore, the presence of fast food restaurants only contributed to small percentages of Italians' diets, which interposes minimal health consequences seen in the data.

MyTable

Research, data, and evidence support that the Mediterranean diet creates a healthier lifestyle while decreasing the prevalence and incidence of non-communicable diseases. Americans experience a higher rate of chronic diseases that are greatly influenced by diet and lifestyle. "Americans consume an average of 2,070 kcal" (Grotto, 2010) and a large portion of those calories come from added sugars and fats. The issue of unhealthy eating lies in availability and accessibility of healthful foods and opportunities for physical activity. The Mediterranean diet is followed in countries that have easier access to specific foods and lifestyles that promote

regular physical activity. Traditions instill the importance of social and familial relationships through preparation and sharing of meals together. Thus, MyTable (Figure 7) was created as a means for Americans to visualize the Mediterranean diet and lifestyle and follow these beneficial practices.

Each section of the MyTable represents how much each individual should consume from the 5 food categories. There are also side notes that explain portion size, physical activity, alcohol consumption, and importance of shared meals. The literature review and the observational research that was completed were verification for these recommendations. In Figure 6, there are pictorial examples, taken in Italy, of dishes one can prepare and eat in the United States. Although Americans do not have the same physical environment and availability of fresh food, there are new movements that are encouraging homegrown produce consumption and finding ways to be physically active every day. Rising popularity in farmers' markets across the country will provide easier access to fresh fruits, vegetables, and dairy products. Specifically in this area, communities have access to the Oakland County Market, Eastern Market in Detroit, and Nino's International Market in Troy.

Grains:

MyTable suggests consuming grains (and fruits/vegetables) as the majority of meals. Grains should be mostly made up from whole and multi grains. Servings should include a variety of forms, such as pasta, bread, cereals, and rice. The importance of whole grains is beneficial for lowering coronary heart disease and supporting gastrointestinal health due to the addition of fiber. They also contain low glycemic indices, which prevents spikes in blood glucose levels (World Health Organization, 2012).

Fruits/Vegetables:

Fruits and vegetables should also make up as large a portion of the diet as grains. Fresh, whole, and uncooked produce is emphasized for the antioxidants, vitamins, minerals, and fiber they contain. Eating a variety of fruits and vegetables with various colors is supported by the Mediterranean diet, which will increase the range of nutrients an individual will receive. A good way to incorporate vegetables into daily meals is to add them to salads, pastas, sandwiches, and eat as snacks. Fruits can be a substitution for desserts and added to plain yogurt to act as a natural sweetener. As a rule of thumb, decorate the table with bright colorful fruits and vegetables.

Protein:

The protein portion of the table is the second smallest portion. It should not rely heavily on meat, specifically red meats. The addition of nuts and legumes provide protein and antioxidants, along with low amounts of cholesterol. This is compared to animal protein. “A diet containing a high total content of antioxidants and a variety of different antioxidants may therefore yield the best protection against oxidative-stress-related diseases” (Blomhoff et al, 2006). Seafood should make up a majority of the protein section as well. Americans should try to eat fish and/or seafood at least twice a week in an effort to work towards actively including seafood into their diets. This will hopefully act as a stepping stone to receiving most protein content from seafood. Choosing fish with high omega-3s, iron, and iodine helps prevent cardiovascular disease while supplying equal amounts of protein as animal meat (World Health Organization, 2012). Not enough Americans consume seafood, and “the standard American diet is high in omega-6 and low in omega-3” (Hojnacki, 2016). The Mediterranean diet and MyTable emphasize the consumption of fish and other seafood to increase the intake of omega-3 fatty acids. Animal protein is an acceptable form of protein, and is suggested to be consumed in the form of poultry and pork,

with red meat eaten no more than once a week. This is to reduce the excess cholesterol intake, but supplying adequate amounts of essential amino acids.

Dairy:

Americans tend to receive the majority of their dairy intake through milk. MyTable also suggests consuming low fat cheeses, yogurts, and dark leafy greens to obtain the recommended 1000mg of calcium per day. By consuming yogurt and cheeses, individuals may receive beneficial bacteria and vitamins as well. With the cases of osteoporosis on the rise, along with a higher prevalence of dental caries, consuming dairy products in a variety of forms may help prevent and protect against this. It is recommended to consume 3 cups per day. Adding low fat cheese, such as mozzarella, to salads, sandwiches, and pastas and eating yogurt as a dessert are good ways to incorporate dairy into meals.

Sweets and Wine:

MyTable allows for moderate consumption of sweets, represented by the smallest portion of the table. When choosing desserts and pastries, one should consider the nutrient density. When consuming confectionaries, making sure there is a protein source with it, such as nuts, lowers the glycemic index. Designating a specific occasion and/or day to partake in foods with added sugars and fats will help reduce the temptation and habit of eating sweets frequently. Also, refraining from eating sweets late in the day, such as after dinner, is encouraged. Sweetened drinks, including soft drinks and fruit juices, should be replaced with naturally sweetened, 100% fruit juices and carbonated (frizzante) water.

Wine has been shown to have health benefits when consumed in moderation. Moderation is defined as 2 servings of 5 ounces per day, with a meal. Research supports the benefits of wine,

which is said to help reduce cardiovascular disease, in addition to other chronic diseases. This is due to the phenolic acids and polyphenols, also present in fruits. Thus, the addition of wine, especially red, in the diet, can protect against arterial diseases and increase lipoprotein metabolism (German & Walzem, 2000).

Figure 7: MyTable

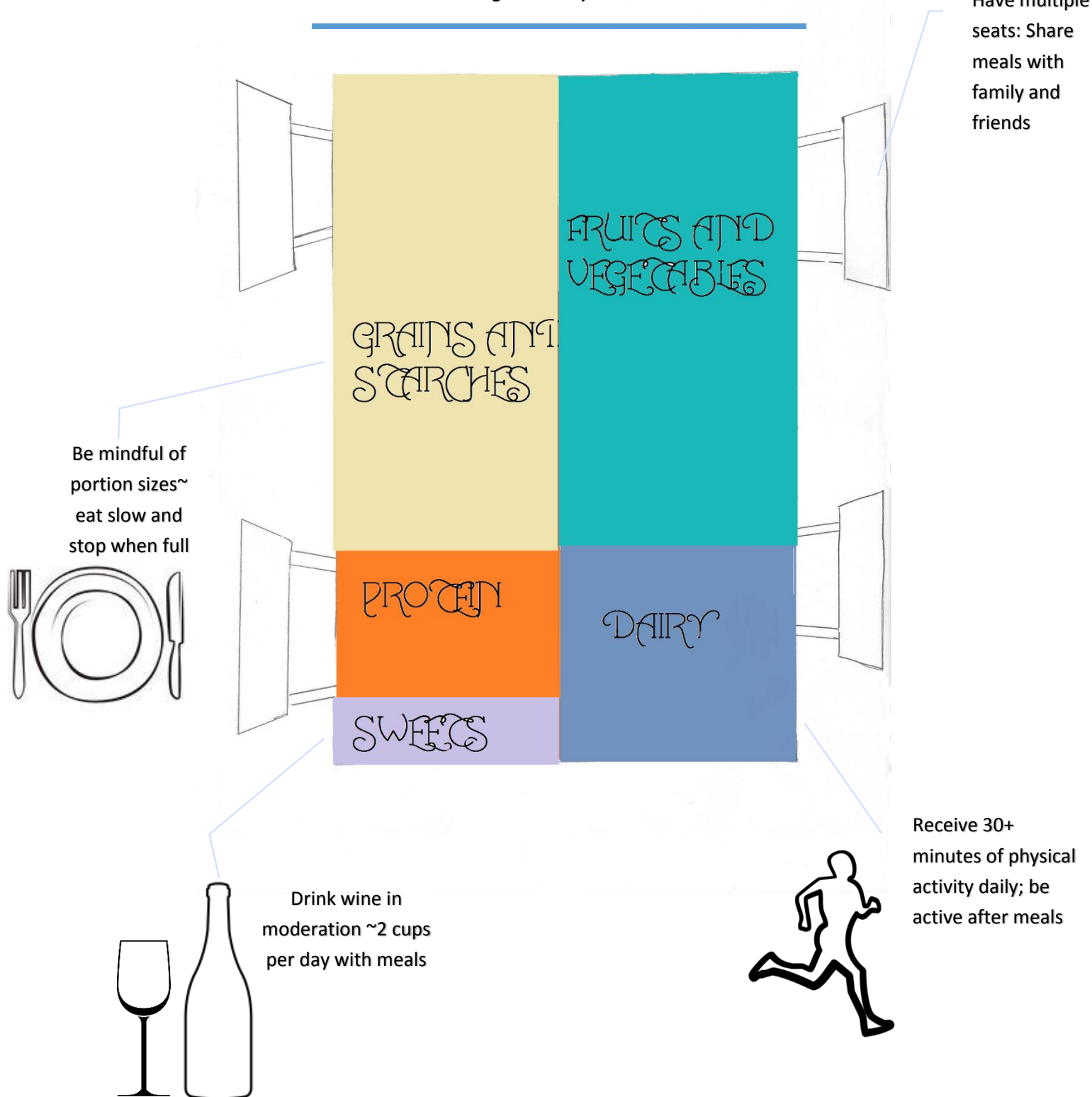


Figure 8. Pictorial examples of dishes for each food category from various cities in Italy



Limitations

The limitations from this observational research include the lack of causation due to the methodology, researcher bias, and low generalization. Observational data collected cannot assume causation with the factors being measured. Although Italians were statistically healthier than Americans, and they followed the parameters of the Mediterranean diet, one cannot state that their health is directly affected by diet and lifestyle. There are confounding factors to be considered such as differences in demographics, age, season (time of year), and individual personalities. In observational research there is the potential of researcher bias. The researcher may unconsciously collect data that is in line with their hypothesis and/or interpret data in a biased way. Although this study included various rural and urban settings throughout Italy, data cannot be generalized to a large population due to the different environmental, political, religious, and demographical differences between Italy and the United States. Thus, data from this observational study can only produce evidence of a relationship between the Mediterranean diet and lifestyle with improved health outcomes, concerning chronic diseases. Support for this can also be included from prior experimental studies done, which were researched as background data and statistics for the hypothesis of this study.

Conclusion

In conclusion, through literature research and observational study, with self-evaluation aspects, the hypothesis is supported; that there is a relationship between the Mediterranean diet and a more healthful lifestyle compared to that of the Standard American diet. After experiencing both, findings of weight loss, controlled blood glucose levels, and more energy, on a personal level, act as evidence of positive outcomes from implementation of the Mediterranean diet. Observed Italians practiced this diet, and statistics of lower chronic diseases, such as heart

disease and type 2 diabetes, are witnessed. With increased consumption of seafood, legumes/nuts, fruits/vegetables, whole grains, and regular exercise, individuals following the Mediterranean diet, individuals are observed experiencing improved overall health. Not only is diet targeted, but daily physical activity and social relationships are emphasized because of their positive correlation with improved health. In order to progress Americans' health, the implementation of the Mediterranean diet is one tool that may be effective. MyTable is a suggested way for those living in the United States, to advance lifestyle and diet aspects, in hopes to have better health outcomes, including reduction of non-communicable diseases. A shift to fresh fruits and vegetables, and increased knowledge and availability of healthy food, will only benefit the health of the United States. With more research done, healthier lifestyles and decrease in chronic diseases are inevitable.

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