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# Typical Diet Quality in New Zealand compared to other Westernized Countries with an Emphasis on Chronic Disease

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**Abstract**

The diet quality was analyzed for people living in New Zealand and people living in other Westernized Countries (United States, Canada, Western Europe) based on the dietary guidelines. Diet quality was analyzed by looking at consumption of food groups such as fruits, vegetables, meat, and seafood as well as nutrients such as saturated/trans/unsaturated fat, sodium, and added sugars. These nutrients have been linked to certain health outcomes and chronic disease; therefore, the prevalence of chronic disease was researched to determine if there was a correlation between New Zealand's diet and their chronic disease rates in comparison to other Westernized countries.

**Introduction**

New Zealand has a unique history. The island was discovered fairly recently in comparison to the rest of the world and was initially populated by Polynesian and Maori people. Throughout the 17th and 18th century, European explorers began to settle in New Zealand and fought multiple times with the native people until eventually the British claimed control in the mid 19th century. British rule changed over time and eventually New Zealand was granted dominion and has their own government. They are free from the majority of British rule, but still hold the British Queen as their countries official head of state.[1] This history has impacted the culture and food in New Zealand immensely.

Many traditional Maori dishes and Maori cooking methods are still popular, but there is also British influence that can be seen. The third culture of food that can be seen throughout New Zealand today is food from countries that are geographically close to the island such as Malaysia, Indonesia, Thailand, China, Philippines, etc. This mix of cultures has created a unique diet for the people in this area.

After studying abroad and experiencing the different types of food that are prevalent in New Zealand, it is my hope to look at the diet quality of people living in New Zealand and compare it to that of other Westernized countries. While in New Zealand there were many observations that I made about the food and food system that are different than what I have experienced in the United States. Some of these differences included much less availability to fast food chains and foods such as pasta. However, there was lots of fresh produce available,

numerous vegetarian and vegan options, and most food was minimally processed. Cafes were extremely popular in my experience and typically served pies that could be filled with a variety of foods including meats, cheese, egg, etc. Through researching these phenomenons, it will be discovered whether or not these observations are typical and affect the health of people living in New Zealand, or if they are simply based on bias from the experiences that I had which may not be typical to what someone actually eats or experiences.

In addition to my experiences with food, I also noticed differences in the health of people in New Zealand versus the United States. I observed there to be less obese people in comparison with the United States. However, this observation may be bias because of the places and activities that I was a part of. I hope to research the differences in diet quality of people living in New Zealand with those living in other Westernized Countries. For the purpose of this paper, I have defined Westernized countries as the United States, Canada, and Western Europe. I chose to use these countries specifically instead of comparing New Zealand to world averages because I believe that these countries live a similar lifestyle. I chose not to include the rest of the world because there are numerous underdeveloped countries and countries with different cultural practices around food that could potentially cause their statistics to be misrepresented in the ways that they will be compared in this paper. Additionally, underdeveloped countries may have less access to adequate healthcare or health education which could also cause a bias.

## Background

### *Dietary Guidelines*

To promote a healthy diet within a population, dietary guidelines are often created. These are general guidelines made to promote a healthy diet and lifestyle for the average, healthy person. They also serve as a place for policymakers to go to aid in decisions about diet and overall health. These guidelines have limitations and do not fit the needs of every individual person, but are a starting place for looking at a population as a whole.

When examining the United States and Canadian dietary guidelines, there are numerous commonalities. The United States guidelines promote fruit and vegetable consumption with an emphasis on eating a variety, they also recommend at least half of the grains in the diet be whole grains. Fat-free or low-fat dairy is promoted along with oils and protein including seafood, legumes, lean meats, poultry, eggs, nuts, seeds and soy. The dietary guidelines state to limit saturated and trans fats as well as added sugars and sodium.[2] These guidelines were created based on current scientific findings therefore, Canadian dietary guidelines are very similar. Some additional points that the Canadian Dietary Guidelines make would be consuming more plant based protein so they include products such as tofu in their list and other vegetarian options such as kefir and yogurt. These guidelines also specify water as the primary drink and replacing saturated fats with unsaturated fats.[3]

When comparing the dietary guidelines of the United States and Canada with New Zealand, it is unsurprising to realize that the guidelines are extremely similar. New Zealand guidelines promote eating multiple fruits and vegetables, incorporating whole grains and fiber, consuming low or reduced fat dairy, and lean protein with plant sources.[4] Understanding that the

guidelines are similar is important in evaluating the diet of the various countries because there is an understanding that the same foods and guidelines are being promoted to people living in each of the countries. Therefore, these dietary standards can serve as a base to compare the diets of people living in New Zealand with people living in other Westernized countries.

### *Food System*

Before examining the quality of a regions diet, the food system must be examined to understand what food is available and the ways in which it is being produced. The quality of any country's diet is largely dependent on the food system. The food system consists of a large framework that eventually leads to the quality of one's diet. Some of the drivers for the food system include biophysical and environmental; innovation, technology, and infrastructure; politics and the economy; sociocultural; and demographics.[5] These all play a role in the next level which would include the food supply chains and food environments.[5]

The food supply chain is comprised of multiple systems starting with the production of the food all the way through the retail and marketing of the product. This is important when looking at what is available and what is part of the food environment. This includes the physical and economic environment of a person or group of people and the food that they are able to obtain because of where they are located, but also what they are able to afford.[5] All of these factors then come together in a store or market when a consumer chooses what items to buy. Then based on what the consumer buys determines the quality of their diet. Therefore, if someone has limited access to food or falls into a lower socioeconomic status, they may not have

as much diversity in their food choices which is important to understand when comparing populations. Not all people in a particular country have the same access and privilege therefore, their diets will look different. For the purpose of comparison, country averages will be used to account for all people in the area. Diet quality also consists of making sure that the food being consumed is safe and includes the quality and quantity of the food being consumed.[5]

Understanding that the food system and certain drivers (biophysical and environmental; innovation, technology, and infrastructure; politics and the economy; sociocultural; and demographics) can affect the availability of food in an area is the first step. There are many factors that could have an effect on what someone buys in the grocery store or consumes. One example of this within New Zealand that I noticed was that they do not allow any food products to be grown or imported that are genetically modified. With this in mind as a single factor of many, the diet quality of people in New Zealand will be compared to the diet quality of people in other Westernized countries. Understanding that some of the differences in choices are made by the consumer in a grocery store or market, while recognizing that there are drivers much more widespread that control the choices that are available in these grocery stores or markets that will also affect the diet quality.

**Diet Quality**

The quality of a diet cannot be easily quantified because many of the factors are dependent on the individual. Therefore, throughout this section the average actual consumption of each country will be compared to the dietary guidelines and other scientific research to

determine whether or not the intake is optimal to prevent chronic disease. All foods and nutrients cannot be addressed in this paper for the sake of length; therefore, the foods and nutrients chosen have direct links to promoting or preventing chronic disease based on current available literature.

### *Fruit and Vegetable Consumption*

The optimal consumption for fruit is considered to be 300g per day. However, a study found that people in Australasia which consists of New Zealand and Australia have the second highest consumption of fruit by region at about 167g/day. 57% of people who live in New Zealand reach the goal of eating at least 2 or more servings of fruit per day.[4] Western Europe is only slightly behind this region with a consumption of about 165g/day which can be compared to high income North America (United States and Canada) with a consumption of about 98g/day.[6] The United States specifically has an alarmingly low rate of fruit consumption with only 25% of people meeting or exceeding the recommended 2 servings per day.[2]

Optimal consumption of vegetables is set at 400g per day. People living in Australasia consume approximately 130g/day. In New Zealand specifically, 64% of people consume 3 or more servings of vegetables per day.[4] Western Europe has a slightly higher consumption with an average of 165g/day, but high income North America is much lower than both of these regions with a consumption of about 105g/day.[6] In the United States only 13% of people meet or exceed the recommendation for vegetables daily.[2]

### *Seafood and Meat Consumption*

Seafood was chosen because it is a protein source that is typically high in unsaturated fats. People living in Australasia consume about 28g/day of seafood compared to 35g/day in Western Europe and 20g/day in high income North America.[6]

Besides seafood, we can also look at meat consumption overall. Meat consumption in New Zealand is averaged to be 12.9kg/capita yearly while the average of other westernized countries is 19.2kg/capita yearly (United States 25.9kg/capita, Canada 17.3kg/capita, and Western Europe 14.5kg/capita).[7]

*Fat Consumption*

The dietary guidelines recommend that people consume less than 10% of their calories from saturated fat each day. People in New Zealand typically consume more than this at about 13-14% of their calories coming from saturated fats. This can be compared to the United States at 11-12%, Canada at 10-11% and Western Europe at about 13-14%.[8] It is interesting to see this percentage for New Zealand knowing that a large portion of saturated fat in the diet of someone living in the United States comes from meat. As stated above, New Zealand eats less meat in comparison but still has a high saturated fat intake. One explanation for this discrepancy is that the majority of saturated fat intake in New Zealand does not come from red meat, but instead comes from butter, milk, cheese, and other fat added to dished.[4]

Trans fat should also be limited to less than 1% of daily calories.[4] People in New Zealand, typically meet this goal with about 1% of calories coming from trans fat. This is

positive in comparison to other westernized countries that consume an average of almost 3% of calories from trans fat.[8]

### *Sodium Consumption*

Besides the link that sodium has to hypertension, this was a nutrient that I noticed a difference in during my experience in New Zealand. I did not notice a decrease in the salt consumption until I returned to the United States and all of the food that I ate tasted extremely salty. One observation made in New Zealand was that salt was not typically placed on the table as it is in the United States and Canada. Therefore, I wanted to see if there was a large difference in the amount of salt consumed by each country. Recommendations for sodium include consuming less than 2300 mg/day.[3] One study found that about 77% of people in two cities in New Zealand consume too much sodium.[9] This can be compared to Canada where 58% of people and the United States where 89% of people over consume sodium.[3,2] Looking at these percentages based on the recommendations, the average New Zealand consumption is 3.44 g/day. This study grouped Canada and United States together for an average consumption of 3.62 g/day and found Western European intake to be 3.81 g/day.[10]

### *Added Sugar Consumption*

Added sugars should be limited to 10% or less of calories.[11] 58% of people in New Zealand consume too much sugar along with 70% of people in the United States.[12,2] Looking at added sugar overall, the highest consumption in the world is from the United States with a consumption of about 190 g/day followed by Canada about 170 g/day.[13]

**Correlation of Diet and Chronic Disease**

The reason that recommendations are set for nutrients is because the levels set are strongly correlated with positive health outcomes. The top factor of health loss in New Zealand is dietary risk. This ranks above smoking, alcohol, high BMI, hypertension, occupational risk, and low physical activity. Dietary risk is associated with the development of cardiovascular disease (CVD), cancer, and diabetes which causes health loss.[4] Additionally, certain foods and nutrients have different ties to chronic diseases. One example of this could be fruit. Eating the correct amount of fruit can decrease risk for CVD, stroke, esophageal cancer, and lung cancer.[6] Vegetables can have a lot of the same benefits by decreasing risk of CVD, stroke, and esophageal cancer.[6] Protein is more interesting because seafood has been seen to decrease the risk of CVD and stroke while consumption of red meat and processed meats has been seen to increase risk of diabetes and colorectal cancer.[6]

Within foods there are different nutrients that should be consumed in certain amounts to promote positive health benefits. It is important to look at some of these nutrients specifically that can be found in a variety of foods and have strong links to health outcomes whether positive or negative. An example that is present commonly in meat and other animals products would be saturated fat. Eating more than the recommended amount of saturated fat is linked to negative health outcomes such as an increased risk for CVD and type 2 diabetes.[3] Studies have shown that in order to decrease this risk, saturated fats should be replaced in the diet with unsaturated fats.[3]

As talked about above, saturated fat is typically found in red meat and dairy or other animal products while seafood is still a source of protein but is much higher in unsaturated fats.[4]

Another nutrient that is commonly tied to negative health effects would be consuming more than the recommended amount of sodium. Sodium in excess raises blood pressure which can lead to an increased risk of CVD and has been tied to an increased risk of stomach cancer. Therefore, it is important to limit sodium in the diet where possible but it is typically over consumed both in New Zealand and other Westernized countries.[9,10]

Furthermore, added sugars pose negative health risks if consumed in excess. The most widespread concerns currently with added sugars are that they contribute to obesity and obesity related diseases as well as dental caries.[12] Chronic diseases such as type 2 diabetes, CVD, and some cancers are more commonly found in people who are obese or overweight further showing the importance of stopping this perpetuating cycle.

**Prevalence of Chronic Disease**

Chronic disease has become a worldwide epidemic and accounts for the majority of all deaths in New Zealand, United States, Canada, and Western Europe. Looking specifically at New Zealand, 92% of all deaths can be attributed to chronic disease, with 41% of these deaths from CVD and 27% from cancer.[14] These rates are similar to other Westernized countries where an average of 88% of all deaths are contributed to chronic disease (Canada- 89%, United States- 88%, Europe- 86%,) and an average of 41% of these deaths from CVD (Canada- 34%, United States- 38%, Europe- 52%,) and an average of 24% from cancer (Canada- 29%, United States-

23%, Europe- 19%,).[15,16,17] The World Health Organization recognizes this as a problem and has estimated that 80% of premature CVD, stroke, Type 2 Diabetes and 40% of cancers could be prevented with interventions such as eating a healthy diet, engaging in regular physical activity, and avoiding tobacco products.[14]

A strong risk factor for chronic disease is being overweight or obese. In New Zealand, 65.6% of people were overweight and 62.6% of people were overweight in westernized countries (Canada- 64.1%, United States- 67.9%, Western Europe- ) in 2016.[18] Overweight was defined as having a BMI of 25 $kg/m^2$ or above. To see if the majority of these people are in the overweight (25.0-29.9 $kg/m^2$) versus obese categories (30.0 $kg/m^2$ and above), average BMI for each country was analyzed. New Zealand was found to have an average BMI of 28.0 $kg/m^2$. Other Westernized countries had an average BMI of 27.3 $kg/m^2$ (Canada- 26.9, United States- 28.9, Western Europe- 26.1).[18]

**Conclusion**

The leading cause of death in every country analyzed was cardiovascular disease. CVD risk is increased if a person has hypertension which is correlated to a high dietary intake of sodium. Therefore, it can be analyzed in each country the percentage of CVD related deaths that can be attributed to sodium intake. New Zealand and Australia have the lowest instances of CVD related deaths but this can be attributed to the overall population size which is much smaller than other regions of the world. Therefore, to compare, percentages of CVD related deaths will be used instead of the crude data. In New Zealand and Australia, 11.2% of CVD related deaths can be attributed to sodium intake. This percentage can be compared to that of other westernized countries at 12.7% (United States and Canada-11.9%, Western Europe- 13.4%).[19] As stated

earlier, New Zealand and every other Westernized country analyzed typically overconsumes sodium and by reducing sodium consumption overall, CVD risk would also decrease. Therefore, this is not a problem that New Zealand is able to escape based on their uniqueness, in terms of CVD they are facing the same issues as other Westernized countries.

In addition to CVD, obesity and cancer are problematic in New Zealand in similar rates as in other Westernized countries. Factors that contribute to obesity and cancer rates could include high added sugar and saturated fat consumption. New Zealand consumes slightly less added sugars and slightly more saturated fat in comparison, but their saturated fat typically comes from different sources than other Westernized countries.[12,9] New Zealand had the lowest meat consumption analyzed but saturated fat consumption still remained high because of full fat dairy products and other products such as margarine.[4] Some of the ways to prevent these chronic diseases is to consume fruits and vegetables and unsaturated fats such as those found in seafood. New Zealand had consumption of fruits and vegetables close to Western Europe, but much higher than the United States and Canada comparatively.[4] This trend also remains true for seafood consumption because Western Europe consumes slightly more seafood than New Zealand while the United States and Canada have lower intakes.[6]

Overall, there is not strong evidence that people in New Zealand eat a significantly different diet than those in other Westernized countries. This diet may be one contributing factor to the risk of chronic disease that was found to be present across all countries analyzed.

Future research to expand understanding of differences between New Zealand and other Westernized countries would include looking at physical activity levels of people living in the countries. Physical activity plays a large role in contributing to and preventing chronic disease.

Additionally, another aspect that could be analyzed in further research would be the health disparities that are seen between the Maori and non indigenous people. These health disparities could be compared to those seen with indigenous people in other parts of the world to see if they are similar or different. Overall, this paper looks merely at one aspect but could become much more broad in the future.

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