# Introduction

# In this paper, we will evaluate the Cartwright family’s diet. When we think of the term diet, we can quickly sum it up as the foods people eat *habitually*. Breaking it down further, we must then think about what a habit is. A habit is behavior repeated long enough to take place without cognitive awareness.[1] As with any behavior change, a person must put in a consistent effort, commitment, and desire to do something different for themselves or those they love. Long-term success with any behavior change must involve new positive goals for the person to pursue.[2] By repeating the new behaviors regularly in deliberate pursuit of the new goal, the behavior gradually shifts from being internally driven to cue or situation driven. Over time the new behavior replaces the previous mental programming becoming more or less automatic, solidifying into a changed habit.

# Working with this family, we will incorporate small incremental changes using SMART goals to gauge success.

# Case Presentation

# The case presented today is the Cartwright family[3]. The family presents as follows; adults Darren, age 37 years, Jeanette, age 32 years, and juvenile daughter Kayleigh, age 6 years.

# Darren and Jeanette work at a factory where they schedule to have varied shift work schedules. This shift schedule allows one parent to be at home with their daughter. The family is all home together during the weekend. Daily home-cooked meals are prepared by the parent scheduled for the early shift that week. The parents report “being stuck in a meal rut.”

# Kayleigh is a picky eater and refuses to eat all but a few dishes her parents prepare for her.

# Darren and Jeanette eat at least one daily meal from the food service facility at the factory. The facility does not offer many healthy meal options.

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# The family’s favorite meal rotation is as follows:

# Spaghetti Bolognese - beef mince, a jar of dolman sauce, white spaghetti

# Chicken Curry - a jar of store-bought mild curry sauce, white rice

# Beef Chili with rice - beef mince, chili con carne packet powder mix, white rice.

# Cheese and tomato pizza with chips - frozen pizza, frozen oven chips

# Shepherds Pie - beef mince, peas, white potato mash, packet powder mix

# Family Goal

# The family would like to change their diet to improve their daily nutrition and create healthy kitchen habits.

# Family Diet Overview

# The family is currently only eating a select few meals to appease their daughter, who has developed picky eating habits. The family is not consuming much in the way of vegetables. No fresh vegetables or fresh fruits are reported. The basis of the meals the family consumes is; low nutrient and full of highly processed ingredients. Their diet includes a lot of refined carbohydrates such as white rice, enriched pasta, white potatoes, and frozen prepared pizza. These refined carbohydrates can cause rapid blood sugar rise and fall. Lack of satiation due to the low fiber content in the highly processed ingredients could also be an issue. The family uses a large amount of commercially prepared sauces and seasoning packets. These are typically high in excess sodium and sugar and may contain potentially problematic flavorings and preservatives.

# The Cartwright’s current diet is potential for future issues with weight gain, chronic disease, poor nutrition, and setting the stage for future poor eating habits for their growing daughter. [4]

# Family Plan Overview

For the Cartwright Family, the following recommendations for diet changes will be implemented using SMART goals.[5] The SMART goals will be presented to the family and evaluated by the following criteria:

# **S**imple: easy to follow

# **M**eaningful: creating long-term positive habit changes

# **A**chievable: easy to implement

# **R**ealistic: small, subtle changes

# **T**imed: introduced slowly over 30 days before adding new.

The goals outlined in this plan will include the following:

**#1** - Getting the whole family involved

## **#2** - Increase daily intake of fruits and vegetables

## **#3** - Batch Cooking on weekends

## **#4** - Replacing Carbohydrates

## **#5** - Using less commercially processed ingredients

# Family Plan Detail

## Goal #1 - Getting the whole family involved

# **Let the child be a part of the action by allowing them to choose one new fruit or vegetable to try for the week.**

# This activity will help them develop a sense of belonging and a say in family decision-making. Research shows that getting children involved in shopping, meal planning, and food preparations from a young age creates positive lifelong healthy eating habits.[6] These habits develop from repeated witnessing of parents and caregivers demonstrating healthy eating habits. Reshaping eating habits with negative behavior correction showed a less successful long-term change in attitude. Allowing children to explore the shapes, colors, and smells of foods in the grocery or local farmer’s markets can help instill a curiosity to try new things. Explaining where the food is grown and visiting local small farms can also positively impact how the child connects with the food intrinsically. These events can also be a time of positive family bonding and a chance to create new memories that can later foster positive memory recollection of childhood food experiences. Allowing the child to explore the new food in the kitchen with all their senses, hands, mouth, and nose will enable them to form opinions about the new food.[7] Also, when age-appropriate, teaching children to cut fruits and vegetables and put together healthy easy meals may create a desire to be more interested in expanding their food choices.[8]

## Goal #2 - Increase daily intake of fruits and vegetables

# **Try adding a new fresh or frozen fruit or vegetable to each meal; this can be as simple as a fruit or vegetable salad or vegetable side dish.**

# Studies show that “Low vegetable consumption is associated with poorer health, and diets low in vegetables are associated with 1.5 million deaths globally”. [9] Fruits and vegetables play an important role in human nutrition and should be included in every meal. They contain many different chemical components, such as antioxidant and anti-inflammatory phytochemicals that positively affect our health. Reports confirm that consuming vegetables and fruits can be associated with a lower risk for chronic disease and may help reduce oxidative stress. [10] The family will be encouraged to “eat a rainbow” of fruits and vegetables while considering what is in season for them locally or using frozen to supply the most nutrients in the off-growing season. The parents will be encouraged to model adding more fruits and vegetables to the family’s diet. Studies show that children are aware of their parents’ eating behaviors and will model after them. If children see parents enjoying fruits and vegetables for snacks or a salad with a meal, they will be more likely to adopt these healthy behaviors. [11]

## Goal #3 - Batch Cooking on weekends

# **Make time on the weekends to shop and prepare food as a family.**

# Getting the family together in the kitchen will be a big key to the enjoyment of cooking and positive, healthy eating habits for the whole family. The time we spend cooking has decreased dramatically over the last 50 years, correlating with the rise in chronic disease.[12] The following are a few simple ideas for the family to choose from to help implement this goal:

# ***Cook for leftovers*** - when preparing a family meal, make an extra serving or 2 for the working parents to take with them during their shift.

# ***Doubling or Tripling a recipe*** - If the meal freezes well, make ahead and store in meal-size portions for the family or individual portions for working parents.

# ***Cook food for the whole week*** - pick a day and make all the meals for the week ahead of time. \*This may be a long-term goal for implementation later down the road.

# ***Batch prep all fresh ingredients for the week*** - cutting fresh fruits and vegetables like onions, carrots, salad greens, and fruit salads, so they are easy to grab and quickly incorporated into meals or healthy snacks.

# ***Marinating meats*** - batch marinating meats can increase the flavor of a dish and make it more tender and quicker to prepare.

# ***Make ahead sauces and dressings for the week*** - most sauces can be made ahead and stored in the refrigerator. Doing this can enhance the flavor complexity as the ingredients have time to meld together.

# The family may also consider that not all convenience foods are bad. There are many pre-cut options available at the local grocer, such as prepared salad greens, fresh pre-cut fruit, and vegetables, as well as pre-cut fresh meats and prepared frozen options. These may be useful for the family to help with the early adoption of adding more fruits and vegetables to the daily meals. It is worth noting that fresh pre-cut fruits and vegetables lose nutrient content due to moisture loss, air exposure, and oxidation, so frozen may be a more nutrient-dense option long term.

## Goal #4 - Replacing Carbohydrates

# **Look at the carbohydrates used during meal time and replace the simple carbs (white flour, white rice, and white potatoes) with more complex carbs (whole grain four, brown rice, and sweet potatoes).**

# When choosing carbohydrates, the family should consider if what they are choosing will help balance blood sugar throughout the day.[14] Selecting the right carbohydrates can support healthy blood sugar, cardiovascular health, and gastrointestinal function, increase the daily fiber intake and satiate the family for extended periods. Increased fiber in the diet causes the food to be released more gradually into the small intestine. The more gradual transit of the food through the digestive tract helps reduce blood sugar spiking by providing a slower-burning blood sugar release, causing levels to rise more slowly and consistently after meals.[13] They would want to avoid white “enriched” flour and pasta that is highly processed and steer towards whole grain ingredients that contain more fiber.

# Research suggests that long-term elevated blood sugar may lead to the development of chronic disease and obesity. Also, adding high-fiber vegetables has been shown to improve blood sugar balance and increased fullness. [15]

# The following is a chart of carbohydrate comparison to show the Glycemic Index (blood sugar response) of what the family is currently consuming vs. recommended swaps. We are looking for a lower number with Glycemic Index values to indicate the longer, slower blood sugar rise.

# Glycemic Index of Carbohydrates in the family’s favorite meal vs. recommended swap:

# White Rice - GI 81 Brown Rice - GI 66

# White Potato Mashed - GI 98 Sweet Potato - GI 70

# White Flour Pizza Crust - GI 100 Whole Wheat Pizza Crust - GI 84

# White Enriched Spaghetti Pasta - GI 61 Whole Wheat Spaghetti Pasta - GI 40

# As noted in the chart above, the family consumes high blood sugar spiking and low-nutrient carbohydrates. By swapping out the white carbohydrates on the left of the chart for the more nutrient-rich ingredients on the right side, they will increase the daily fiber and lower daily blood sugar. The recipes listed below will provide ways to incorporate these ingredient swaps.

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## Goal #5 - Using less commercially processed ingredients

# **Consider using less commercially processed sauces and seasoning mixes.**

# Highly processed foods may contain more sodium, sugar, and saturated fat than home-prepared foods.[16] Often these processed foods will also include a wide range of preservatives, additives, and synthetic vitamins and minerals. These ingredients enhance the product’s shelf stability and longevity. However, some reports show adverse reactions in sensitive populations. In some packaged foods, ingredients such as MSG are added to enhance flavor and palatability. These additives are often mildly addictive as they cross the blood-brain barrier as a neurotransmitter and excite neurons in the body to improve the flavor of bland food. Young children are often more affected by MSG due to their immature blood-brain barrier to protect them from potential toxicity.[17] In the United States, the FDA (Food and Drug Administration) “considers the addition of MSG to foods to be “generally recognized as safe” (GRAS).” The FDA requires that foods containing added MSG be listed on the packaging as monosodium glutamate. MSG also occurs naturally in some ingredients and may be listed as hydrolyzed vegetable protein, autolyzed yeast, hydrolyzed yeast, yeast extract, soy extracts, and protein isolate.[18] To summarize, it would be suggested that the family be aware of the potential of consuming these extra unknown ingredients in packaged foods. The recipes below will provide ways to achieve the same flavors using fresh ingredients.

# Family Plan Summary

# For the Cartwright Family, it would be recommended to incorporate the following.

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# To gain the child’s approval in food choices. The tactic for this recommendation would be to let their daughter choose one new fruit or vegetable for the family to try for the week. Allowing buy-in from the child may gain the child’s approval for expanding the family’s meal choices and flows into the second recommendation of adding a new fruit or vegetable to each meal. The tactic would be to challenge the family to “eat a rainbow,” increasing the overall nutrient value of the meals the family is consuming. To make time on the weekends to shop and prepare food as a family. This tactic goes along with the first recommendation of gathering meal input from the family. It also creates a sense of cooperation, knowledge transfer to the child in the kitchen, and family bonding time. To learn to replace simple carbs with complex carbs. The tactic with this will be replacing their usual choices with whole foods; this includes whole grain wheat, rice, and plant-based alternatives. Lastly, to learn to reduce the use of commercially processed sauces and seasoning mixes. Cooking from scratch allows the family to control the ingredients they are consuming and experiment with new flavors and additional nutrients brought in with various herbs and spices.

# Recipes

Below are revised versions of the family’s favorite recipes to begin. The ingredient swaps listed should be easily implemented and can be easily modified and adapted as the family’s tastes begin to change. If the family is resistant to the new vegetables added to the dishes, it may be necessary to mince them finely or grate them, so they are less noticeable. The goal is to get the additional nutrients into the dish; they can be hidden if need be.

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## Spaghetti Bolognese

Ingredients:

Olive oil 1 tps of following dried herbs

1 large red onion diced basil, oregano, thyme

4 carrots diced 1 box whole wheat pasta

2 cloves garlic minced or instead of pasta use spaghetti squash

Sea salt or zucchini noodles

1 lbs ground beef (grass-fed if possible) ½ cup partially cooked red lentils

1/2 cup dry white wine

1 large tomato diced handful of fresh baby spinach

1 box passata or tomato paste finely chopped

Prepare whole wheat pasta as directed. Heat olive oil in a pan, add diced onion and garlic, season with sea salt, and cook until soft. Add ground beef and carrots, allowing to cook through, and add lentils. Degauss pan with white wine. Add the tomato passata and diced tomato to the pan and simmer until the tomatoes are cooked. Add herbs and salt to taste, and mix in spinach before serving.

For spaghetti squash, wash the outside of the squash and cut in half lengthwise, removing seeds. Lay cut side down in a glass baking pan with ¼” of salted water in the bottom. Roast in a low oven 300F until soft and easily punctured with a fork.

It is easiest to use a spiralizer tool for zucchini noodles, but noodles can also be cut into long thin strips lengthwise from young zucchini. The zucchini noodles can be cooked directly in the sauce added in with the herbs and salt and allowed to cook for just a few minutes so that they hold their shape.

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## Chicken Curry

Ingredients:

1 large red onion mustard seed

3 cloves of garlic curry powder

2 cups vegetable stock turmeric

1 large sweet potato ground cinnamon

1lb of boneless skinless chicken breast Sea salt

2 cups of fresh baby spinach olive oil

In a pan, heat olive oil to high heat, add roughly chopped onion, garlic, mustard seed, and season with sea salt, and allow to lightly brown. Add roughly chopped skin on sweet potato and cover with vegetable stock. Simmer until soft. Once the sweet potato is cooked, add turmeric and curry powder, and run the mixture through the food processor until smooth—return puree to the pan. Cut chicken breast into small uniform pieces and add to puree, cooking thoroughly for 10-12 minutes. Remove from heat. Add fresh spinach and cinnamon, and allow spinach to wilt and serve.

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## Cheese Pizza with Sweet Potato Chips

Ingredients:

Multigrain bread mix with yeast packet 1 large sweet potato chopped into 1” pieces

Tomato Passata paste olive oil

1 half red onion diced sea salt

1 clove of garlic minced cinnamon

Mozzarella cheese black pepper

Dried basil

Combine bread mix packet, water, and yeast as instructed on the package, and allow to rise for 10-15 minutes.

Peel the sweet potato and cut it into 1” squares. In a mixing bowl, toss with olive oil, salt, pepper, and cinnamon. Spread on a baking sheet and cook for 30 minutes at 375F until tender.

Roll the dough onto a pizza pan, and par-bake the crust at 300F for 5 minutes. Let the crust cool, then cover with tomato sauce, finely minced garlic, and some cheese shreds. Add other toppings in layers with cheese alternating. Cook in a hot oven until the cheese is melted. Serve with sweet potato chips and a green or fruit salad.

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## Cottage Pie

Ingredients:

Olive Oil Sea Salt

3 cloves of garlic chopped bouillon flavor

1 large red onion chopped black pepper

2 large sweet potatoes diced thyme

Ground beef or lamb Tomato passata paste

Heat olive oil, add chopped onion and garlic, season with sea salt, and cook until soft. Peel and chop sweet potatoes, place in another pan, add boiling water and cook until soft. Add meat to cooked onion and garlic, and cook until brown. Add a small portion of tomato passata mix well, then add a tbsp of bouillon flavor to the sauce mix along with black pepper and thyme. Mix well, remove from heat, and spread into a baking pan. Drain and mash cooked sweet potatoes then layer them over the sauce base. Place in the oven to crust mashed sweet potatoes for 10 mins and serve with a side of greens or broccoli.

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## Vegetable Chili

Ingredients:

1 large red onion 1 tsp Smoked paprika

3 cloves of garlic ½ tsp Cumin

Sea salt ½ tsp Mild Chili powder

3 cans of prepared beans (choice) Tomato Passata paste

½ cup prepared lentils Black pepper

1 large tomato diced 1 Small zucchini diced small

1 large carrot diced small 1 cup brown rice

Bring 2 cups of water to a boil, add brown rice and a bit of sea salt, and cover and reduce to low heat. Allow to cook undisturbed. Heat olive oil, add onions and garlic, and season with sea salt in a pan. Allow to cook until soft. Add tomato Passata, canned beans mostly drained but not dry, and lentils. Combine and mix in smoked paprika. Add in carrot, tomato, and zucchini. Allow to simmer for 3-5 minutes. Add in cumin and chili powder to simmer for a few more minutes. Adjust seasoning to taste. Fluff rice with a fork and serve with chili.

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# Bibliography

1. Nilsen P, Roback K, Broström A, Ellström PE. Creatures of habit: accounting for the role of habit in implementation research on clinical behavior change. Implement Sci. 2012 9 Jun.;7:53. doi: 10.1186/1748-5908-7-53. PMID: 22682656; PMCID: PMC3464791.
2. Wood W, Rünger D. Psychology of Habit. Annu Rev Psychol. 2016;67:289-314. doi: 10.1146/annurev-psych-122414-033417. Epub 2015 10 Sep. PMID: 26361052.
3. Pinnock, D., 2022. The Healthy Kitchen: How to guide clients to better nutritional foundations. Assignment - Case Study. Available at: https://www.culinarymedicinecollege.com/products/diploma-in-culinary-medicine/categories/2148035311/posts/2149447156 [Accessed August 31, 2022].
4. Stepnick, G.S.A., Smith, J.L. & Groff, J.L., 2005. Advanced nutrition and human metabolism, Belmont,, ca: Thomson/Wadsworth.
5. By the Mind Tools Content Team, MT, 2016. Smart goals: How to make your goals achievable. Time Management Training From MindTools.com. Available at: https://www.mindtools.com/pages/article/smart-goals.htm [Accessed August 31, 2022].
6. Carrero I, Vilà I, Redondo R. What makes implementation intention interventions effective for promoting healthy eating behaviours? A meta-regression. Appetite. 2019 Sep 1;140:239-247. doi: 10.1016/j.appet.2019.05.024. Epub 2019 22 May. PMID: 31125588.
7. Rapley, G. & Murkett, T., 2008. Baby-led weaning: Helping your baby love good food, Vermilion.
8. Chu YL, Farmer A, Fung C, Kuhle S, Storey KE, Veugelers PJ. Involvement in home meal preparation is associated with food preference and self-efficacy among Canadian children. Public Health Nutr. 2013 Jan;16(1):108-12. doi: 10.1017/S1368980012001218. Epub 2012 11 May. PMID: 22578854. Available at: <https://pubmed.ncbi.nlm.nih.gov/22578854/> [Accessed 30 Aug. 2022]
9. Harris J, Tan W, Raneri JE, Schreinemachers P, Herforth A. Vegetables for Healthy Diets in Low- and Middle-Income Countries: A Scoping Review of the Food Systems Literature. Food Nutr Bull. 2022 Jun;43(2):232-248. doi: 10.1177/03795721211068652. Epub 2022 7 Jan. PMID: 34991377; PMCID: PMC9118491. Available at: [Vegetables for Healthy Diets in Low- and Middle-Income Countries: A Scoping Review of the Food Systems Literature - PMC (nih.gov)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9118491/) [Accessed 30 Aug. 2022].
10. Zhang YJ, Gan RY, Li S, Zhou Y, Li AN, Xu DP, Li HB. Antioxidant Phytochemicals for the Prevention and Treatment of Chronic Diseases. Molecules. 2015 Nov 27;20(12):21138-56. doi: 10.3390/molecules201219753. PMID: 26633317; PMCID: PMC6331972. Available at:<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6331972/> [Accessed 30 Aug. 2022]
11. Draxten M, Fulkerson JA, Friend S, Flattum CF, Schow R. Parental role modeling of fruits and vegetables at meals and snacks is associated with children’s adequate consumption. Appetite. 2014 Jul;78:1-7. doi: 10.1016/j.appet.2014.02.017. Epub 2014 12 Mar. PMID: 24630934; PMCID: PMC4034448. Available at:<https://pubmed.ncbi.nlm.nih.gov/24630934/> [Accessed 30 Aug. 2022]
12. Ballantyne, S. (2017). Paleo Principles. Las Vegas: Victory Belt Publishing, Inc., Pages 458-461.
13. Murray, M.T. & Pizzorno, JE, 2014. Part Two - Principles of Health. In The encyclopedia of natural medicine. London, UK: Simon & Schuster, pp. 46–47.
14. Gropper S., Smith J., Groff J. (2005) Advanced Nutrition and Human Metabolism. Belmont, CA USA: Thomas Wadsworth, Pages 82-83
15. Liska D., Bland J., Costarella L., Levin B., Lukaczer D., Schiltz B., Schmidt M., Lerman R. (2004). Clinical Nutrition, A Functional Approach. Gig Harbor, Washington 98335 USA: The Institute for Functional Medicine, Pages 32-36
16. Poti J., Mendez M., Wen Ng S., Popkin B., Is the degree of food processing and convenience linked with the nutritional quality of foods purchased by US households?, The American Journal of Clinical Nutrition, Volume 101, Issue 6, June 2015, Pages 1251–1262, <https://doi.org/10.3945/ajcn.114.100925>
17. Win, D.T., 2008. MSG – flavor enhancer or deadly killer - thaiscience. MSG – Flavor Enhancer or Deadly Killer. Available at: https://www.thaiscience.info/journals/Article/AUJT/10290710.pdf [Accessed September 3, 2022].
18. Center for Food Safety and Applied Nutrition, USFDA, 2012. Questions and answers on monosodium glutamate (MSG). US Food and Drug Administration. Available at: https://www.fda.gov/food/food-additives-petitions/questions-and-answers-monosodium-glutamate-msg#:~:text=Is%20MSG%20safe%20to%20eat,as%20safe%E2%80%9D%20(GRAS). [Accessed 3 Sep., 2022].