

Background

Obesity is a very complex issue that is one of the most challenging public health issues in our society today. Obesity continues to grow despite recognition of the problem. According to the CDC and Mitchell et al., approximately 34% of adults and 15-20% of children and adolescents in the U.S. are obese, putting them at risk for and obesity-related conditions such as heart disease and diabetes. Access to accurate information surrounding weight-loss, and dispelling fad-diet myths can reduce unsuccessful and dangerous weight-loss approaches. The book Omega Z Diet for Weight Loss by Kebles and Hemric provides a science-based approach to weight management. This project involved creating menus, graphics, charts, calorie specific meal plans in a user-friendly fashion to guide dieters in weight loss efforts. In an attempt to increase the user-friendliness, The American Diabetic Association exchange system was adjusted by adding colorful icons and converting ounces into cups to make it more applicable to real life. The new exchange list has a wide variety of foods that allow users to build elaborate but healthy meals and still track food intake in all food groups. Users can prepare meals with different food sources from the list to stay within their chosen caloric intake. Even with a user-friendly guide to safe and effective weight-loss, behavior change takes time. It could take generations before there could be a shift in the rose curve affecting the obesity epidemic.

Introduction

- Prevalence of obesity was 42.4% in 2017-2018
- From 1999-2000 through 2017-2018, the prevalence of obesity increased from 30/5% to 42.4% and severe obesity from 4.7% to 9.2%
- Obesity-related conditions include heart disease, stroke, type 2 diabetes, certain types of cancer, and premature death
- Prevalence of obesity varied by income and education within the United States
- The diet and weight loss industries are one of the biggest industries in the United States
- The diet industry is currently worth 72 billion dollars and is expected to keep growing more than 2% per year

Methods

- Adjusted the American Diabetic Association Exchange System to make it more user-friendly
 - Figures 1, 2, 13
- Created a Food Diary Template for all caloric intake meal plans
 - Figure 3
- Created Meal Plans for caloric intakes between 1400 to 2000 calories per day
 - Figures 4, 5, 6
- Adjusted recipes to fit into specific caloric intake meal plans
 - Figures 7, 8, 9
- Created a chart for tips to maintain a healthy lifestyle
 - Figures 10 and 11
- Created a Phytochemical Color Guide
 - Figure 12

Starches contain 15 grams of carbohydrate and 80 calories per serving. One serving equals:

Measurement	Ingredient
1 slice	Bread (white, pumpernickel, whole wheat, rye)
2 slices	Reduced-calorie or "lite" bread
1/2 (1 oz)	Bagel (varies)
1/2	English muffin
1/2 C	Hamburger bun
1/2 C	Cold cereal
1/3 C	Rice, brown or white, cooked
1/3 C	Barley or couscous, cooked
1/3 C	Legumes (dried beans, peas or lentils), cooked
1/2 C	Pasta, cooked
1/2 C	Bulgur, cooked
1/2 C	Corn, sweet potato, or green peas
3 oz	Baked sweet or white potato
3/4 oz	Pretzels
3 C	Popcorn, hot air popped or microwave (80% light)

Figure 13: Example of the American Diabetic Association Exchange System

Omega Z Food List

- Each provides approximately: 80 calories-15 grams of carbohydrates-3 grams of protein- 1 gram of fat
- Each provides approximately: 45 calories- 5 grams of fat
- Each provides approximately: 60 calories- 15 grams of carbohydrates
- Each provides approximately: 25 calories- 5 grams of carbohydrate- 2 grams of protein
- Each provides approximately: 45 calories- 7 grams of protein- 2 grams of fat
- Each provides approximately: 75 calories- 7 grams of protein and- 5 grams of fat
- Each provides approximately: 100 calories- 7 grams of protein- 8 grams of fat
- Each provides approximately: 80 calories- 12 grams of carbohydrate- 8 grams of protein
- Each provides approximately: 125 calories- 12 grams of carbohydrates- 8 grams of protein- 5 grams of fat
- Each provides approximately 150 calories- 12 grams of carbohydrates- 8 grams of protein- 8 grams of fat

Figure 1: Omega Z Food List Guide

COMBINATION FOODS

Combination Foods	Serving Size	Exchange
Entrees		
Burrito (beef and bean)	1 burrito	
Casserole (tuna noodle, lasagna, Spaghetti with meatballs, chili with beans, macaroni and cheese)	1 cup	
Pizza Cheese/vegetarian, thin crust	1/4 of 12" pizza	
Meat topping, thin crust	1/4 of 12" pizza	
Cheese/vegetarian or meat topping, rising crust	1/6 of 12" pizza	
Pocket Sandwich	1 sandwich	
Pot pie	1 pot pie	

Figure 2: Omega Z Food List Example

1400 Calorie Meal Plan Samples

Omega-Z Food Group	Total Number of Servings per day
Starch	7
Meat	5
Milk	2
Fruit	2
Vegetable	3
Fat	2

3-Day Sample Menus

Meal	Day 1	Day 2	Day 3
Breakfast	One Bowl Black coffee or unsweetened tea	Yogurt Fruit Bowl -2/3 cup low fat plain yogurt -1/2 cup strawberries -1/4 cup grapes, low fat Black coffee or unsweetened hot tea 8 oz of water	Tropical Smoothie Black coffee or unsweetened tea
Snack	10-11 baby carrots (1/2 cup)	1 apple	1 cup skim milk
Lunch	12 Saltine crackers Sole Salad with: 2 oz Rotisserie Turkey, Baby spinach, cucumbers, onions, watermelon, Lemon juice, white vinegar and Dill Lemon Seasoning	Open Faced Chicken and Avocado Tortilla	1 cup cooked quinoa, cooked 1 cup Broiled Spices cooked 1/2 cup oatmeal core 1/2 cup tomatoes, cucumbers and onion 8 oz of water 1 cup skim milk
Snack	8 oz of water 1/2 cup fresh blueberries	3 Graham Crackers 1 cup skim milk	1 cup skim milk
Dinner	Chicken Stir Fry over Rice 1 cup of milk 8 oz water	Ground Turkey and Broiled Spiced Salad 8 oz water	Black Bean Taco Salad 1 cup of skim milk
Snack		3 cups Air Popped Popcorn	

Figure 4: Omega Z 1400 Calorie Meal Plan

1600 Calorie Meal Plan Samples

Omega-Z Food Group	Total Number of Servings per day
Starch	8
Meat	5
Milk	3
Fruit	2
Vegetable	2
Fat	3

3-Day Sample Menus

Meal	Day 1	Day 2	Day 3
Breakfast	1 scrambled egg with 1 cup chopped spinach 1/2 cup whole wheat bread 1/2 banana	French Smoothie Scrambled Eggs Black coffee or unsweetened tea	Strawberry Smoothie Black coffee or unsweetened tea
Snack	1 cup skim milk Black coffee or unsweetened tea	3 graham Crackers 1 cup skim milk	1/2 bagel with 3 Top low-fat Cream cheese
Lunch	Turkey Swiss Sandwich 1/2 cup of dried tomatoes, cucumbers and onion 8 oz of water 1 cup skim milk	Orange Shredded Chicken 8 oz water	Grilled Chicken with Garlicked Vegetables 1 medium baked potato 1 cup skim milk
Snack	8 animal crackers 12 Almonds 1 cup skim milk	1/2 bagel with 1 Tbsp butter 1 cup skim milk	1 cup skim milk
Dinner	Chicken Lettuce Wraps 8 oz water	Turkey Steamed with Red Potatoes 8 oz water	Chicken Cilantro Quesadilla 8 oz water 1 cup of skim milk
Snack		3 cups air popped pop corn 1 cup skim milk	

Figure 5: Omega Z 1600 Calorie Meal Plan

Omega Z Food Diary Template for 1400 Calories

Omega Z Food Group	# of Daily Servings	Number of Servings PER DAY shown as icons
Starch	7	
Meat	5	
Milk	2	
Fruit	2	
Vegetable	3	
Fat	2	

Breakfast

When: _____ Activity while Eating: _____

Where: _____ Reason for Choice: _____

With Whom: _____ Length of Meal: _____

Degree of Hunger before: High Medium Low

Degree of Satisfaction after: High Medium Low

Figure 3: Food Diary for 1400 Calories

2000 Calorie Meal Plan Samples

Omega-Z Food Group	Total Number of Servings per day
Starch	10
Meat	5.5
Milk	3
Fruit	4
Vegetable	5
Fat	4

3-Day Sample Menus

Meal	Day 1	Day 2	Day 3
Breakfast	Mango Orange Smoothie 1 fried egg 1 Slice Whole Wheat bread with melted 1/2 oz of shredded cheddar cheese Black coffee or unsweetened tea	Berry Smoothie 1/2 bagel with 1 Tbsp reduced fat cream cheese Black coffee or unsweetened tea	Avocado Smoothie Bowl 1 medium egg 1 oz Grated cheddar cheese 1 slice of whole wheat toast Black coffee or unsweetened tea
Snack	2 oz chicken breast, skinless 1 medium 12" diameter sweet potato 1 Tbsp Chutney, Ground 1 cup spinach, cooked from fresh	Chicken and Vegetable Lunch 8 oz water	Chicken and Mushroom Pasta 1 cup skim milk
Snack	14 animal crackers 1 cup skim milk	6 graham crackers 1 cup skim milk	8 animal crackers 1 cup skim milk
Dinner	Mango Shred Salmon Pomegranate Salad 1 cup of milk 8 oz water	Savory Turkey and Broccoli Spiced Salad 1 cup skim milk 8 oz water	Salmon and asparagus orzo dinner 1 cup of skim milk
Snack	3 cups of air popped pop corn	3 cups air popped pop corn	

Figure 6: Omega Z 2000 Calorie Meal Plan



Figure 8: Picture of Tropical Smoothie from 1400 Calorie Meal Plan

Instructions:

- Blend kale, water in a blender until it is green, smooth and free from chunks of kale.
- Add the mango, pineapple, flax seeds, chia seeds, and the coconut water, blending until smooth and creamy.
- Pour into glass and enjoy.

Figure 9: Instructions for Tropical Smoothie from 1400 Calorie Meal Plan

Eating Out

- Prepare in advance by packing fruit, sliced vegetables, low-fat string cheese, or unsalted nuts to eat during road trips.
- Choose water or low-fat milk or other drinks without added sugars over soda or sweet tea.
- Start meals with a salad packed with vegetables and the dressing on the side.
- Divide an entree between with others and ask for small plates.
- Instead of an entree, order a side dish or an appetizer-sized portion.
- Fill your plate with vegetables and fruit.
- Choose Stir-fries, kabobs, or vegetarian menu items to fill your plate with vegetables.
- Select fruits for dessert.
- Check the menu for items that are lower in calories, saturated fat, and sodium.
- Don't choose the buffet.
- Choose steamed, grilled, or broiled dishes over fried in oil or cooked in butter.
- Request 100% whole-wheat breads, rolls, and pasta.
- Don't clean your plate. Instead half for another meal.
- Avoid salads made with mayonnaise (tuna, chicken, macaroni, coleslaw).
- Order sandwiches with mustard instead of mayonnaise, tartar sauce or special sauces.
- Remove the skin from poultry.
- Leave off the butter, gravy and sauces.
- Choose a baked potato instead of French fries.
- If you must have sour cream, use low-fat.
- Top pizza with vegetables rather than high fat meats like sausage or pepperoni.
- Choose small portions of everything, frozen yogurt and soda if you must have dessert.
- Reduce calories by substituting unhealthy sides with vegetables or a salad.

Figure 10: Example of Chart of Tips for Maintaining a Healthy Lifestyle when Eating Out

Habits

- Now is the time to start new habits. Habits become harder to break the longer you do them.
- Introduce one new habit at a time.
- Work on one habit at a time until it becomes natural and a part of your life.
- Commit to a specific habit for 30 days.
- Anchor the new habit to something you already do regularly, preferably daily.
- Be sure to carving out time every day to consistently do it.
- Make a habit stick by turning it into an automatic behavior.
- Be content with baby steps.
- Make tiny commitments and focus on small wins, just be consistent.
- Find an accountability partner.
- Make a plan a head of time for when obstacles emerge.
- Reward milestones accomplished.

Figure 11: Example of Chart of Tips for Maintaining a Healthy Lifestyle by Developing Habits

The Phytochemical Color Guide

The National Cancer Institute recommends eating a variety of colorful fruits and vegetables daily to provide your body with valuable vitamins, minerals, fiber, and disease-fighting phytochemicals. Whole grains also have phytochemicals and have been added to this list.

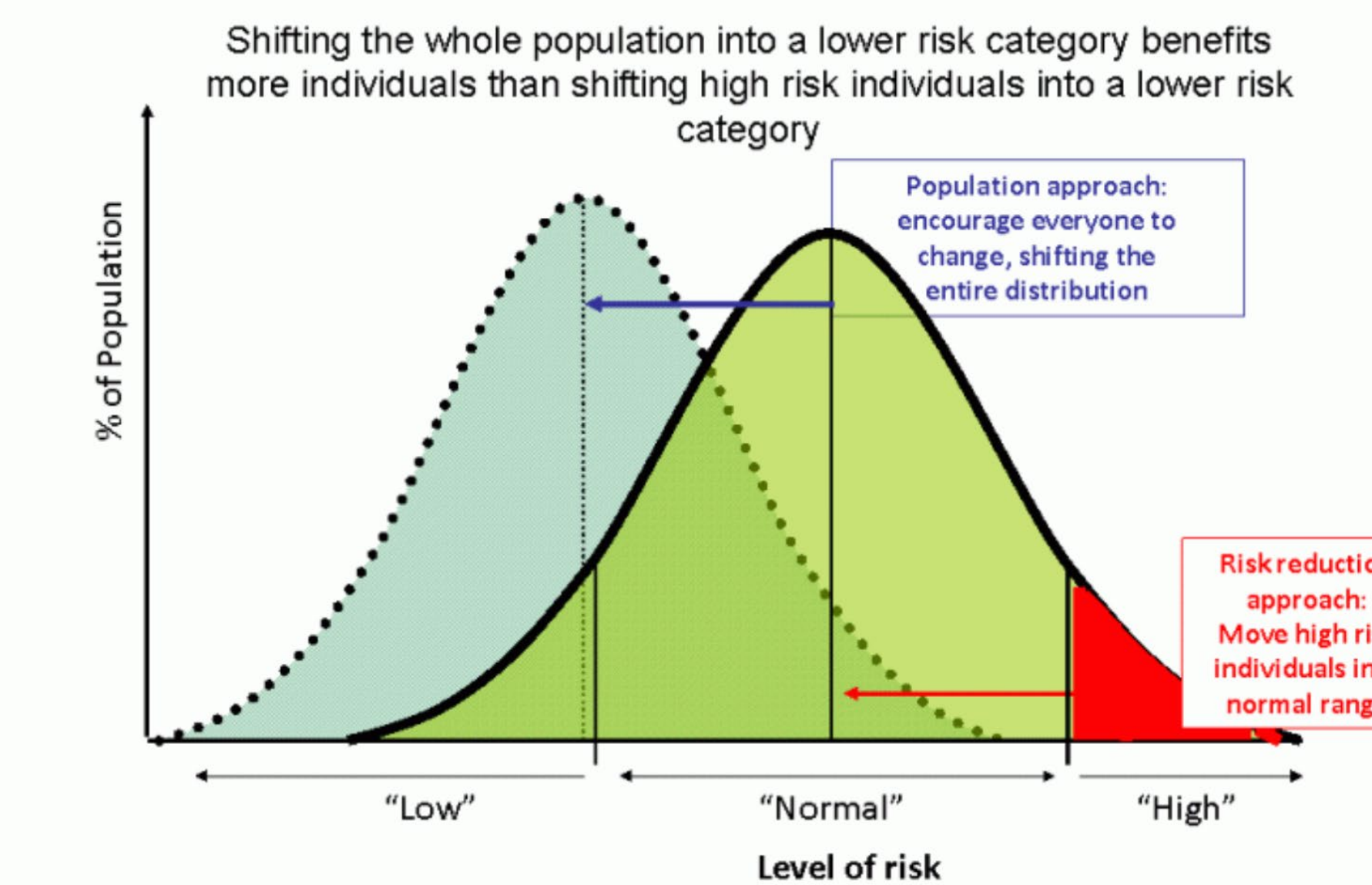
Color	Phytochemical	Found in
Red	Anthocyanins	Apples, beets, cabbage, cherries, red cabbage, red onions, red beans
Yellow/Orange	Beta-carotene	Apricots, butternut squash, cantaloupe, carrots, mangoes, peaches, pumpkin, sweet potatoes
White	Flavonoids	Apricots, elemantine's, grapefruit, lemons, papaya, pears, pineapple, yellow raisins
Green	Allium/allicin Lutein, zeaxanthin	Chives, garlic, leeks, onions, scallions Broccoli, collard greens, honeydew melon, kale, kiwi, lettuce, mustard greens, peas, spinach
Indoles		Arugula, broccoli, bok choy, brussels sprouts, cabbage, cauliflower, kale, Swiss chard, turnips
Blue/Purple	Anthocyanins	Blackberries, black currants, elderberries, purple grapes
Brown	Phenolics Beta-glucan, lignans, phenols, plant sterols, phytoestrogens, saponins, tocotrienols	Eggplants, plums, prunes, raisins Barley, brown rice, oats, oatmeal, whole grains, whole-grain cereals, whole wheat

Figure 12: Phytochemical Color Guide

Public Health Application

- The goal of Public Health is to move the Rose Curve to the left
- Rose curve represents the whole population; tail is the people who are highest risk in this case it is chronic dieters and obese individuals
- By shifting the mean the left, everyone in the distribution benefits and ultimately the population experiences an increase in health behaviors
- Decrease in morbidity and mortality can be seen as well
- Estimated annual health care costs of obesity-related illness are approximately \$190 billion or 21% of annual medical spending in the United States
- Providing help or access to those in need is a basic concept in Public Health. God gives us the knowledge and skills we need to help others through Him. As seen in 1 Peter 4:11, "If anyone speaks, they should do so as one who speaks the very words of God. If anyone serves, they should do so with the strength God provides so that in all things, God may be praised through Jesus Christ. To him be the glory and the power forever and ever. Amen," everything we do in Public Health is through Him for the glory of God.

The Bell-Curve Shift in Populations



Source: Rose G. Sick Individuals and sick populations. *Am J Epidemiol* 1985; 123:32-38.

Figure 14: Rose Curve

Biblical Rationale

God made food before he made humankind. Food provides us comfort, nourishment, and tradition. Food from farms and ranches is the best food we can provide our bodies, processed foods from factories are usually more harmful to us than beneficial. The diet and weight loss industries are one of the biggest industries in the United. The heart of man is evil and has capitalized on people's desires for weight loss. They have capitalized off of the phrase, "if only I could lose 10 pounds, I would be happy." As a Christian and being the hands of feet of Jesus, it is our responsibility to spread the knowledge we have and share it with our community to provide a safe and effective approach to weight-loss without capitalizing on individuals' desires. The obesity epidemic has struck the United States like a plague. The epidemic has progressively worsened throughout generations, which has caused more people to believe in quick fixes for weight loss. Millennials represent the future generation of dieters, and diet companies already have easy access to them via social media, influencers, telephone applications, and much more. Change has to start somewhere, no matter how big or small, giving the public a science-based approach to weight loss and explaining that the proper way to weight loss is a long-term lifestyle change than we can all imagine living in a healthy America one day.

References

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