SOUTH BAYLO UNIVERSITY

The Effect of Auricular Acupressure and Psyllium Husk Powder on Weight Loss: A Case Series

by

Jeong Hye Choi

A RESEARCH PROJECT SUBMITTED

IN PARTIAL FULFILLMENT OF THE

REQUIREMENTS FOR THE DEGREE

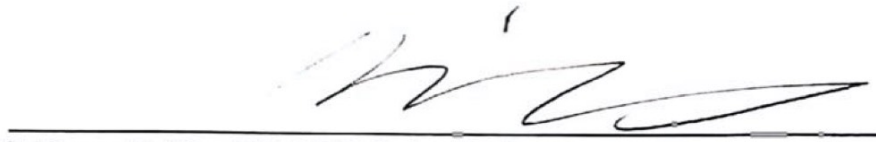
Doctor of Acupuncture and Oriental Medicine

LOS ANGELES, CALIFORNIA

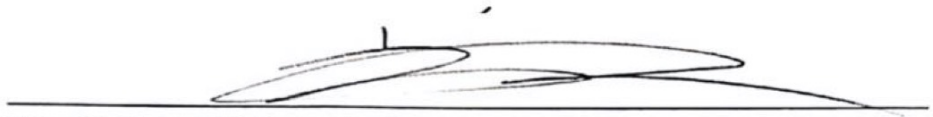
June 2021

DISSERTATION OF JEONG HYE CHOI

APPROVED BY RESEARCH COMMITTEE

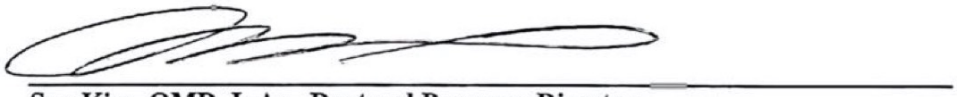


Suhkyung D. Kim, MD, OMD, L.Ac., Professor

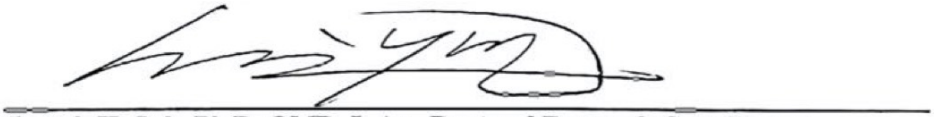


Shan Qin Cui, OMD, L.Ac, Professor

Hanok Lee, DAOM, L.Ac, Professor



Soo Kim, OMD, L.Ac., Doctoral Program Director



Joseph H. Suh, Ph.D, OMD, L.Ac., Doctoral Research Coordinator

South Baylo University

Los Angeles, California

June 29, 2021

The Effect of Auricular Acupressure and Psyllium Husk Powder on Weight Loss: A Case Series

Jeong Hye Choi

SOUTH BAYLO UNIVERSITY

Research Advisor: Sunwook Kim, OMD, L.Ac

ABSTRACT

The aim of this study was to examine whether the combination of Auricular Acupressure and Psyllium Husk Powder could induce weight loss and reduce waist circumferences. Participants received acupressure for 6 weeks twice a week, Shenmen, hunger point, stomach, and spleen, and consumed a 5 g psyllium powder and 6 oz water mixture prior to eating twice a day, with an additional 8 oz of water consumed per serving. Body measurements of body weight and waist circumference, 5 cm above the belly button, at the belly button, and 5 cm below the belly button, were measured once each week. The results showed that psyllium and Auricular Acupressure combination showed a statically significant amount in weight loss and waist circumference. The average body weighed decreased from 170.5 ± 37.09 lb to 164.3 ± 36.19, a difference of 6.1 ± 2.83 lb ($p = 0.008$). The waist circumference for 5 cm above the belly button changed from 38.0 ± 4.31inches to 36.2 ± 4.09, a difference of 1.78 ± 0.93 ($p = 0.013$); for at the belly button from 39.1 ± 4.00 to 37.2 ± 3.94, a difference of 1.9 ± 0.83 ($p= 0.007$); and for 5 cm below the belly button from 39.1 ± 4.63 to 37.7 ± 4.82, a difference of 1.36 ± 0.22 ($p = 0.000$). The average body fat percentage changed from 35.1 ± 8.24 to 33.9 ± 9.12, a difference of 1.2 ±

0.95 ($p = 0.044$). The average BMI changed from 29.4 ± 4.60 to 28.3 ± 4.65, a difference of 1.1 ± 0.45 ($p = 0.059$). The practical applications of this case series can serve as a starting point for many who want to begin weight loss programs.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

To all the professors who have guided me during this DAOM program, I would like to sincerely express my gratitude for helping me complete this dissertation and curriculum. I want to thank the DAOM faculty Dr. Shan Qin Cui, Dr. Han Ok Lee, and Dr. Jae Jong Kim for leading discussions and presentations during the classes and expanding the depths of our knowledge. This program was not only increasing the theoretical knowledge of oriental medicine but also the practical application to address real world situations and circumstances. I would like to thank DAOM program coordinator Dr. Soo Kyung Kim and Dr. Seong Hwa Hue for aiding me in fulfilling my program requirements and completing my duties. I would like to thank Dr. Suh Kyung Kim for reviewing my dissertation. I would like to thank Dr. Sun Wook Kim for being my research advisor. I would like to thank research coordinator Dr. Ho Hyung Suh and Dr. Ki Haeng Cho for aiding me as I completed this dissertation. The journey of finishing this dissertation seemed originally impossibly difficult and arduous but their help has allowed me to take each step properly to complete this paper. Once again, I would like to thank everyone for helping me become a Doctor of Oriental Medicine and giving me the ability to aid others during these valuable and memorable years.

I. INTRODUCTION

A simple definition of obesity is the excess body mass given a certain height, but that misses the main observation of excess body fatness that is identified with obesity. The Center of Disease Control defines obesity as the occurrence of Body Mass Index (BMI) greater than 30.0 when dividing the body weight in kilograms by the square of body height in meters. Although certain individuals of high muscular density with low body fatness can fall in the overweight and obese category following the mathematical formula, the correlation found from using BMI and body fat as a simple indicator shows strong correlation with health complications and mortality.[1]

Current global trends show that adult obesity has been increasing at astonishing rates and estimates by the World Health Organization show that in 2016, more than 1.9 billion adults aged 18 years and older were overweight or obese.[2] In the U.S. with estimates from the CDC reporting that the age-adjusted prevalence of obesity among U.S. adults was 42.4% in 2017-2018 with no significant differences in prevalence between age groups and gender.[3] That is to say with everything being equal, obesity affects all walks of life and all genders. Projections for the increasing proportion of adults considered obese may be slowly leveling off after 2030 but the most serious estimates predict even up to 85% of the population becoming obese by that timeframe.[4] A main concern for obesity is due to the many complications and comorbidities that manifest metabolically, a few frequently observed examples such as type 2 diabetes, cardiovascular disease, and cancers leading to eventual mortality.

Especially in senior individuals, the matter becomes more complicated due to the physiological changes that naturally occur due to aging. Cardiovascular disease is the most common cause of death in the elderly cohort, followed by cancer and stroke.[5] The overlap of the comorbidities of obesity and the natural process of aging enhances the severity of those issues

for the older adults, compounding these health problems and leading to higher rates of mortality.[6] Quality of life diminishes, which can lead to cognitive and mental health issues. As daily physical functions and sensory organs continue to decline as the individual ages, the occurrence of obesity can accelerate the downward trends in ability, suggesting that weight loss regimens are necessary to improve quality of life and health outcomes.[7] With obesity as one of the main roots of heart disease, older adults face more health risks and complications that could have been avoided by careful planning.

In Western cultures like the U.S., there are a variety of options of which individuals can take to initiate weight loss in order to combat obesity and prevent some of the previously mentioned complications. The types of treatment range from simple dietary changes to invasive procedures like bariatric surgery with each process showing varied results. The most popular and well-known diets such as the Atkins diet and Watkins diet follow the principle of low-carbohydrate diet, where intake of carbohydrates is monitored and reduced during consumption. A meta-analysis published in 2006 also found no significant differences in weight loss between low-carb and low-fat diets at one year, suggesting that LC diets are as effective as LF diets for weight loss.[8] Unfortunately, long-term data show that most diets are ineffective after a certain period of time due to fatigue.[9] Lifestyle changes to be effective in the long run must be sustainable and achievable in order for targeted weight loss.[10] For obese adults, who struggle to lose the weight after exhausting all other ways, bariatric surgery such as sleeve gastronomy offers a pathway to reduce body weight when there are no other options. The natures of those surgeries are either restrictive, physically limiting the amount of food the stomach can hold to limit how many calories are consumed, or malabsorptive, shortening or bypassing part of the small intestine to reduce the amount of calories and nutrients absorbed by the body.[11] Despite the

success of the bariatric surgeries, the conditions for an individual to undergo a procedure are restrictive and limit the number of treatments to a small amount.[12]

OBJECTIVES

The objectives of this study are as follows:

1. Determine whether Auricular Acupressure and Psyllium Husk Powder treatment reduces body weight and waist circumference.
2. Compare the body weight changes that occur over time.
3. Compare the waist circumference changes that occur over time.
4. Compare the BMI changes that occur over time.
5. Compare the body fat percentage changes that occur over time.

LITERATURE REVIEW

Western Approach to Treating Obesity: Diet and Exercise

Current viable approaches to treating adult obesity in Western medicine mainly revolve around lifestyle modifications, pharmacotherapy, and bariatric surgery. Most professionals generally advocate behavioral changes as their first treatment plan to reduce body fat and promote healthier outcomes but will switch to a combination of lifestyle changes with pharmaceuticals and/or surgery for those who fail to reduce levels of body fat and regress back to their original unhealthy weight. There are immeasurable amounts of diets available to people today but each diet adjusts the consumed macronutrients in order to achieve immediate short term and long-term weight loss.

Low-fat diets focus on reducing the amount of total fats to 20-35% of the standard daily amount in unadjusted diets. The guidelines include recommendations for "foods to reduce" (e.g. saturated and trans-fat, cholesterol, sodium, added sugar, refined grains, alcohol) and "foods to increase" (e.g. fruits, vegetables, whole grains, low-fat dairy and protein foods, oils) in order to maximize the nutrient content and health promoting potential of the diet.[13] Support shows that low-fat diets are effective weight control strategies in the short- and long-term as long as they are followed. A randomized clinical trial that compared the effects of an intensive lifestyle intervention (ILI) to diabetes support and education (DSE) on the incidence of major cardiovascular disease (CVD) events in overweight or obese individuals with type 2 diabetes. Participants in the ILI group were assigned a calorie restricted LF diet, received frequent behavioral therapy, and extended contact. Those in the DSE group were given standard instructions on three occasions each year for eating a healthy diet and engaging in physical

activity. Weight loss in the ILI group was significantly greater than the DSE group each year over the course of four years, with maximal weight loss occurring at year-1.[10]

The low-carbohydrate (LC) diet is one of the most recognized approaches to weight loss. Many versions of the LC diet exist (e.g. Atkins New Diet Revolution, South Beach, Dukan diet). LC diets often consist of limited amounts of carbohydrate (20-50 gram/day or about 10% of calories from carbohydrate), gradually increasing over time, and relatively high amounts of fat (approximately 60% fat). Participants who followed a LC diet lost significantly more weight than those who followed a LF diet during the first 6 months of treatment. However, differences in weight loss did not persist at year-1. A meta-analysis published in 2006 also found no significant differences in weight loss between diets at year-1, suggesting that LC diets are as effective as LF diets for weight loss.[14]

Pharmacotherapy

Drug therapy may be a suitable option for people who have been unsuccessful in losing weight with lifestyle changes. Patients should use medication in addition to appropriate diet, physical activity and behavioral interventions.

Orlistat is a pancreatic lipase inhibitor that causes around 30% of unabsorbed dietary fat to be excreted through stool. It is available at a dose of 120mg or at 60mg as a P medicine (Alli). It is safe for long-term use, although weight loss is modest. The National Institute for Health and Care Excellence (NICE) supports the use of orlistat in individuals with BMI >30, or >28 with co-morbidities. Treatment should only be continued past three months if the person has lost at least 5% of their initial body weight since starting drug treatment. Continuing drug usage must be consulted with the primary care physician to discuss the benefits and limitations.[15] The

gastrointestinal side effects of orlistat include oily stool, oily spotting, increased defecation, fecal incontinence, and gas with discharge. These symptoms are usually mild to moderate and decrease in frequency the longer the medication is continued.[16]

Lorcaserin is a selective serotonin 2C-receptor agonist and increases satiety. It has been shown to result in a placebo-adjusted weight loss of 3–4kg at year-1, alongside improvements in fasting blood glucose, insulin sensitivity, blood pressure, heart rate, total and LDL cholesterol and C-reactive protein levels.[17] A phase 3 double-blind, randomized, placebo-controlled trial, BLOOM, included 3,182 overweight or obese adults who received either lorcaserin 10 mg or placebo twice daily for 52 weeks, in conjunction with diet and exercise. At week 52, all subjects were re-randomized to either placebo or lorcaserin for an additional year. At 1 year, the average placebo-subtracted weight loss was 3.6% and 47% of the subjects taking lorcaserin lost >5% as compared to 20.5% in the control group. Subjects who showed a weight loss of >5% in year 1 and were maintained on lorcaserin treatment in year 2 were able to maintain their weight loss better than those who had been switched to placebo.[18] The most common adverse reactions reported in those taking lorcaserin include headache, dizziness, fatigue, nausea, dry mouth, and constipation. A potentially life-threatening side effect from lorcaserin is serotonin syndrome.[16]

Bariatric Surgery

There are several types of bariatric surgery available for obese patients. In 2018 about 252,000 bariatric surgeries were performed in the United States, the two most common types that account for almost 80% of total surgeries are sleeve gastrectomy and Roux-en-Y gastric bypass (RYGB).[19] The natures of those surgeries are either restrictive, physically limiting the amount of food the stomach can hold to limit how many calories are consumed, or malabsorptive,

shortening or bypassing part of the small intestine to reduce the amount of calories and nutrients absorbed by the body.[11]

The sleeve gastrectomy involves excision of approximately 80% of the stomach to separate a narrow tube or sleeve of the lesser curve of the stomach from the greater curve aspect. The antrum is preserved to maintain gastric emptying. The non-adjustable and non-reversible procedure is a laparoscopic procedure, taking between 30 and 90 minutes. Some patients are treated on an outpatient basis but a one to two-day stay is more common.

Long-term studies have confirmed that bariatric surgery leads to significantly greater weight loss compared with non-surgical interventions.[20] However, bariatric surgery is not readily accessible. Most insurance policies do not easily cover bariatric surgery and for those policies that do cover the procedure, the patient must have tried every other method before and must have a BMI over 35.0.[21] The average costs per surgery can range from $15,000 - $24,000 without any insurance coverage.[22]

Traditional Chinese Medicine Approach to Weight Loss

TCM's etiology of obesity is as follows: obesity is the result of excessive dampness and phlegm in the body that have not been removed. The origin of the excessive dampness and phlegm can be a combination of the physical body becoming weaker, receiving a lot of physical and mental stress, and/or intaking an excessive amount of nutrients.[23] The lungs, spleen, and kidneys are important in regaining normal function. Once affected, the lungs cannot fully function by ascending and descending. The spleen becomes limited in transporting and transforming essential substances throughout the body. The kidneys do not excrete bodily waste as efficiently as before. Acupuncture has been more recognized as a possible treatment method

for obesity. The acupoints commonly used to treat obesity are Sanyinjiao(SP6), Yinlingquan (SP9), Tianshu (ST25), Zussanli (ST36), Zhongwan (RN12) , Fengjong (ST40), Quchi (LI11), Guanyuan (RN4), Qihai (RN6), Shuifen (RN9), Shuidao (ST28), Neiting (ST44), and Hegu (LI4).[24]

A meta-analysis of 21 RCTs looking to evaluate the efficacy of acupuncture found that when acupuncture was compared to either a sham group or a no treatment control group, acupuncture significantly reduced BMI and lowered body weight (MD=-1.22, 95%CI=-1.87 to -0.56) (MD=-1.92, 95%CI=-3.04 to -0.79).[25] The study further compared the effects of acupuncture to diet and exercise and found no significant difference between the two (MD=-1.92, 95%CI=-3.04 to -0.79) suggesting the possibility that acupuncture can be just as effective as a method to weight loss as to traditional diet and exercise. A different study of 40 obese women found that acupuncture treatment decreased insulin and leptin levels and BMI levels when compared to a sham (non-penetrating) group. Further analysis found that levels of plasma ghrelin and CCK increased in the acupuncture receiving group.[26]

Auricular Acupressure

Auricular acupoint stimulation, also called ear stimulation or auriculotherapy, is a method of diagnosing and treating physical and psychosomatic dysfunctions by stimulating a specific point in the ear via multiple objects. Many methods are used, such as finger acupressure, electrical stimulation, lasers, different types of needles, seeds, and magnetic balls.[27] Auricular Acupressure involves taping organic seeds such as Vaccaria or magnetic pellets on acupoints located on the external part of the ears, and then pressing down on the acupoints with a gentle force.[28] A benefit of Earseeds over auricular acupuncture is the less invasive nature of the

treatment process. Patients do not have to expose their bodies in order to access the necessary body acupoints for acupuncture. In addition, stimulation by pressure on the acupoints reduces the risk of adverse events, such as bleeding, hematoma, or infection, that are associated with the use of thin stainless-steel needles.[29]

Common auricular points used for treating obesity include the hunger and stomach points to regulate and induce satiety and fullness.[30] The exact biological mechanisms responsible for the weight loss observed after auricular acupuncture remains uncertain, but a few studies believe the auricular branch of the vagus nerve is thought to be involved.[31] Shiraishi et al investigated the connection between acupuncture, gastric peristalsis, and feeding by examining the effects of auricular acupuncture on the neuronal activity in the feeding center and satiety center. They found that auricular acupuncture stimulates the auricular branch of the vagus nerve, which decreased activity in the feeding region, and increased activity in the satiety region.[32] This leads to the idea that activation in those brain regions can promote reduced food intake which in the end results in body weight loss.

A study of obese men received ear pressing plasters of Vaccaria ear seeds on the Shenmen, stomach, hunger point, mouth, center of ear, and Sanjiao. They received the plasters twice a week for a total of 6 weeks and applied pressure to the plasters prior to eating. A sham group in comparison received seedless plasters and followed the same procedure as the other group but with a different set of acupoints: hip, spleen, nose, and esophagus. The group receiving the treatment had significant decreases in BMI ($P < 0.005$), Trunk Fat Mass ($P < 0.01$, $P < 0.005$), Waist Circumference ($P < 0.005$) and Hip Circumference ($P < 0.001$) after comparison with the sham.[33] A systematic review of 18 RCTs of auricular acupoint stimulation in overweight and obese adults also found that acupressure showed a significant reduction in body weight (MD

of −1.21 kg, a 95% CI of −1.94 to −0.47, P = 0.001), BMI (MD: −0.57 kg/m2; 95% CI: −0.82 to −0.33; P < 0.001), body fat (MD: −0.83%; 95% CI: −1.43 to −0.24; P = 0.006), and waist circumference (MD: −1.75 cm; 95% CI: −2.95 to −0.55; P = 0.004).[34] A more recent meta-analysis found that while most trials from other studies mainly focused on body and BMI, Auricular Acupressure was effective at overall body weight reduction with decreases also found in waist circumference, waist to hip ratio, body fat percentage, and body fat mass. In addition, greater results were found in trials that were 12 weeks long versus the 6 and 8 weeks due to the duration of the treatment process.[28]

Psyllium Husk Powder as a Dietary Supplement

The Institute of Medicine's Adequate Intake guideline recommends 14 g of dietary fiber per 1000 kcal consumed, which is about 25 g/day for women and 38 g/day for men.[35] Despite the recommendation, most of the US population does not consume enough dietary fiber to match those numbers with the average American consuming only at most 15 g of dietary fiber per day.[36] To make up the difference, adults must turn to supplements to achieve those recommended numbers.

Dietary fibers can be placed into 4 meaningful categories: insoluble, poorly fermented; soluble, non-viscous, readily fermented; soluble, viscous/gel-forming, readily fermented; soluble, viscous/gel-forming, non-fermented.[37]

Solubility refers to the fiber's ability to dissolve in water or remain as discrete particles. Viscosity refers to the thickness of the liquid and the fiber particle's ability to thicken when exposed to water. Gel formation refers to soluble, viscous fibers to form links and branches to form a gel when exposed to water. Fermentation is the rate at which dietary fiber can be

degraded by gut bacteria, producing fermentation byproducts such as short chain fatty acids and gas.

Insoluble, poorly fermented fibers (e.g. wheat bran) do not dissolve in water. They remain as solid particles that pass through the intestines. Poorly fermented fibers can work like laxatives by mechanically irritating the gut if particles are sufficiently large and rough while small smooth particles (e.g. wheat bran flour/bread) have no significant laxative effect. Insoluble fibers do not form gels and thus do not provide other (gel-dependent) fiber health benefits.[37]

Soluble, non-viscous, readily fermented fibers (e.g. inulin, wheat dextrin, oligosaccharides, resistant starches) dissolve in water and do not increase in viscosity or form gels. Readily fermented means rapidly and completely fermented when in the intestines. Once fermented, the fiber is no longer present in the stool, increases gas production by the bacteria, and harvests energy from the by-products. They have a prebiotic effect by changing the gut bacteria culture. To date, the marketed fiber supplements have no established clinically meaningful health benefits.[37]

Soluble, viscous/gel-forming, readily fermented fibers (e.g. β-glucan [oats, barley], raw guar gum) dissolve in water and form a viscous gel (e.g. oatmeal). The gel slows nutrient absorption in the intestine, which improves glycemic control and lowers elevated serum cholesterol. Fermentation results in loss of gel and water-holding capacity, meaning, no significant laxative effect and no retained gel to attenuate diarrhea.[37]

Soluble, viscous/gel-forming, non-fermented fibers (e.g. psyllium) dissolve in water and form a gel. The gel increases chyme viscosity to slow nutrient absorption and improve glycemic control and lowers elevated serum cholesterol. Because these do not ferment, there is no gas production or calorie harvest from the by-products and stay in gelled form throughout the large

intestine, providing a dichotomous “stool-normalizing” effect. Hard stools in constipation become softer and loose/liquid stool in diarrhea become firmer.[37]

Psyllium is a soluble fiber that is derived from a plant found in India called Plantago ovata and used mainly as a dietary supplement in husk, granules, powders, and capsules.[38] The psyllium peel contains 72 g of dietary fiber per 100 g.

The Chinese name for Plantago ovato is Cha Jeoncho (車前草), derived from the letters ″車″ and ″前″. Plantago ovato is a tough and common weed that grows alongside the roadside and can be easily spotted while riding in a horse carriage. General Mamu of the Han Dynasty of China discovered the plant when he passed by an outpost while leading his army through the desert.[45]

The young leaves of the plant are usually edible and commonly used as ingredients for soup and herbs. The plant bears fruit in October which can also be used for medicinal purposes.

As a solar plant, psyllium has a cold property that basically attracts heat. It helps clear the eyes and acts as a diuretic by easing and smoothing out the urination process. Diarrhea can also be treated with psyllium as well. Most of the drugs that turn off strong heat (瀉藥) are contraindicated in pregnancy, but psyllium is safe for pregnant women to consume since it is non-toxic.[45]

It can act as a natural laxative and helps bowel movement or provide relief in diarrhea patients. As a soluble, gel-forming, and non-fermenting fiber, psyllium dissolves in water and forms a viscous gel that does not break down in the large intestine. It increases chyme viscosity to slow nutrient absorption which aids in weight loss and does not produce gas or harvest

calories from by-products of fermentation. The gel-formed substance provides the dual normalizing effect on stool and normalizes stool form.[39]

Psyllium has been useful in weight loss plans since the high viscosity of the chyme slows down the food breakdown process and absorption of the nutrients which helps lower cholesterol intake and glycemic spike after food consumption.[40] A study examined the correlation between ultrasonographic gastric emptying and appetite in 12 volunteers with intakes of 10.8 grams of psyllium or placebo before measurements. Psyllium significantly delayed gastric emptying from the third hour after a meal and increased the sensation of satiety. Hunger decreased at the sixth hour after the meal with the psyllium group, displaying the correlation between echographic gastric emptying and sensations of hunger and satiety ($p < 0.001$).[41]

The various properties of this soluble fiber have health benefits other than solely weight control that make controlling metabolism more manageable and promote better short-term and long-term health outcomes.

A 6-month study that assessed psyllium and guar gum in 141 patients with metabolic syndrome resulted in an average weight loss of 3.3 kg for the psyllium group versus the 1.2 kg in the control group and significant improvement in fasting blood glucose (psyllium, -27.9%), insulin (-20.4%), and LDL cholesterol (-7.9%).[42] A 14-week study of healthy adolescent males receiving 6 g/day of psyllium or a placebo with a 2-week washout period before switching interventions showed that fiber supplementation led to a 4% reduction in android fat to gynoid fat ratio ($p=0.019$), as well as a 0.12 mmol/l (6%) reduction in LDL cholesterol ($p=0.042$).[43] No adverse events were recorded and lipid profiles improved for the participants. Another study with 105 adult patients with total cholesterol above 200 mg/dL examined the efficacy of a natural viscous, gel-forming fiber (psyllium) versus a viscous but non gel-forming semisynthetic fiber

(methylcellulose) and a synthetic polymer (calcium polycarbophil) over an 8-week period with doses 3 times a day before meals.[44] Results showed that LDL-cholesterol concentrations were significantly lower for the psyllium treatment group (−8.8%, p = .02 vs. placebo), but not for the other treatment groups.

II. MATERIALS AND METHODS

2.1 Participants

Participants in this study were volunteers who were receiving treatment at Triple Touch Clinic in Anaheim, CA. For inclusion into the study, they were of the following criteria: at least 18 years of age and BMI of at least 25 (overweight). They could not start a new diet or exercise program within 3 months of the study.

2.2 Study Design

A total of 5 participants received the treatment. They had Auricular Acupressure treatment twice a week and were required to press on the acupoints 30 minutes prior to eating meals. Ear seeds were alternately placed each week starting with the right ear in Week 1. The acupoints that were used are the Shenmen, hunger point, stomach, and spleen. For twice a day, an hour before lunch and dinner, participants consumed a mixture of 5 grams of Psyllium Husk Powder with 6 oz of room temperature water and immediately drank the mixture before it congealed. Another 8 oz of water was drunk after the initial mixture. Measurements of the waist circumference at the belly button, 5 cm above the belly button, and 5 cm below the belly button and total body weight were recorded each week. Precaution was taken to ensure that the measurement was at equal height along the waist and back in order to ensure accurate and consistent measurement. Participants maintained their eating and exercise habits throughout the study in order to avoid biased results. Participants received daily food logs to help keep track of the amount of food consumption. Prior to the commencement of the study and at its conclusion, each participant used the In Body Measurement using the Inbody 570 Body Composition Analyzer located in the Anaheim campus of South Baylo University (Figure 1).

Figure 1. Inbody 570 Body Composition Analyzer

2.3 Materials

The Ear seeds that were used were the sterile, for one time use Processed Vaccaria Seeds on Surgical Tape from WuJiang City Cloud & Dragon Medical Device Co., Ltd. The Psyllium Husk Powder for the mixture was PSYLLIUM HUSK POWDER from Healthworks.

2.4 Statistical Analysis

A paired t-test was conducted to determine significance. The program R version 4.0.3 - "Bunny-Wunnies Freak Out" was used to conduct the analysis.[46]

2.5 Exclusion Criteria

The following criteria excluded participation in the trial: pregnancy or lactating women, over 75 years of age, recently started a new diet or change of exercise within the past 3 months, and any medical conditions that may suddenly get worse due to dietary changes from the psyllium mixture during the study. Anyone taking prescribed medication that affected the GI tract and digestion. Daily habits such as eating and exercise could not change during the course of the study.

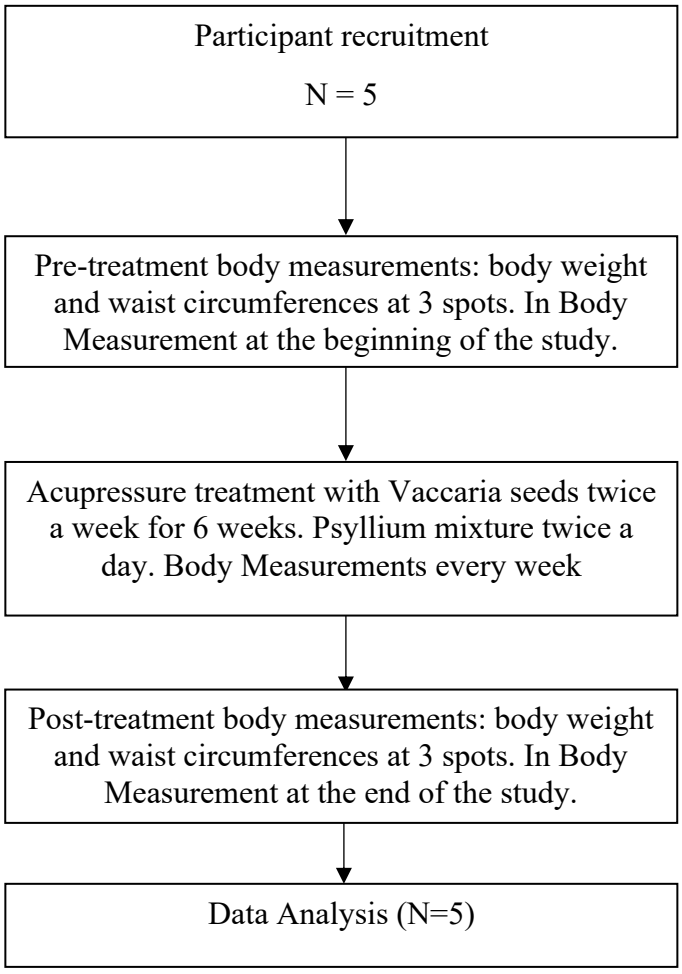


Figure 2. Schematic Diagram of Research Design

III. RESULTS

3.1 Individual Case Results

3.1.1 Case 1

Before the first treatment, patient 1 weighed 161.6 lb. At the end of the program, patient 1 weighed 156.7, experiencing a net 4.9 lb loss. The upper section of the abdomen (5cm above the belly button) began at 38.5 inches and ended at 37.0 inches, a net 1.5-inch loss of circumference. The middle section of the abdomen (at belly button) began at 39.0 inches and ended at 37.5 inches, a net 1.5-inch loss of circumference. The lower section of the abdomen (5cm below the belly button) began at 39.0 inches and ended at 37.5 inches, a net 1.5-inch loss of circumference. BMI for patient 1 dropped from 29.5 to 28.7.

3.1.2 Case 2

Before the first treatment, patient 2 weighed 176.6 lb. At the end of the program, patient 2 weighed 165.6, experiencing a net 11.0 lb loss. The upper section of the abdomen (5cm above the belly button) began at 37.3 inches and ended at 34.0 inches, a net 3.3-inch loss of circumference. The middle section of the abdomen (at belly button) began at 38.0 inches and ended at 34.7 inches, a net 3.3-inch loss of circumference. The lower section of the abdomen (5cm below the belly button) began at 35.5 in and ended at 34.0 in, a net 1.5 in loss of circumference. BMI for patient 2 dropped from 28.5 to 26.6.

3.1.3 Case 3

Before the first treatment, patient 3 weighed 230.2 lb. At the end of the program, patient 2 weighed 224.0, experiencing a net 6.0 lb loss. The upper section of the abdomen (5cm above

the belly button) began at 45.0 inches and ended at 43.0 inches, a net 2.0-inch loss of circumference. The middle section of the abdomen (at belly button) began at 46.0 inches and ended at 44.0 inches, a net 2.0-inch loss of circumference. The lower section of the abdomen (5cm below the belly button) began at 47.0 in and ended at 46.0 in, a net 1.0 in loss of circumference. BMI for patient 3 dropped from 37.12 to 36.15.

3.1.4 Case 4

Before the first treatment, patient 4 weighed 132.0 lb. At the end of the program, patient 4 weighed 127.7, experiencing a net 4.3 lb loss. The upper section of the abdomen (5cm above the belly button) began at 34.0 inches and ended at 33.0 inches, a net 1.0-inch loss of circumference. The middle section of the abdomen (at belly button) began at 36.5 inches and ended at 35.0 inches, a net 1.5-inch loss of circumference. The lower section of the abdomen (5cm below the belly button) began at 37.5 in and ended at 36.0 in, a net 1.5 in loss of circumference. BMI for patient 4 dropped from 25.78 to 24.8.

3.1.5 Case 5

Before the first treatment, patient 5 weighed 152.0 lb. At the end of the program, patient 5 weighed 147.7, experiencing a net 4.3 lb loss. The upper section of the abdomen (5cm above the belly button) began at 35.1 inches and ended at 34.0 inches, a net 1.1-inch loss of circumference. The middle section of the abdomen (at belly button) began at 36.2 inches and ended at 35.0 inches, a net 1.2-inch loss of circumference. The lower section of the abdomen (5cm below the belly button) began at 36.3 in and ended at 35.0 in, a net 1.3 in loss of circumference. BMI for patient 5 dropped from 26.09 to 25.23.

3.2 Change of Weight for Treatment

3.2.1 Change of Weight

Table 1 summarizes the changes in average weight for the participants over the 6 week period. A paired t-test was utilized to analyze the results. Before the treatment process began, the average weight of the participants was 170.5 ± 37.09 lb. After the 1st week, the average weight changed 168.8 ± 36.69 lb. After the 2nd week, the average weight changed to 167.5 ± 36.10. After the 3rd week, the average weight changed to 167.0 ± 35.25. After the 4th week, the average weight changed to 166.3 ± 35.55. After the 5th week, the average weight changed to 165.2 ± 36.83. After the 6th week, the average weight changed to 164.3 ± 36.19. Figure 3 illustrates the change of average weight over time.

Table 1. Change of weight for the treatment

Week	Weight (pound)	Difference (Before - nth)	Percentage (%)	*p*-value*
Before	170.5 ± 37.09			
1st	168.8 ± 36.69	1.7 ± 0.99	1.0 ± 0.52	0.020
2nd	167.5 ± 36.10	3.0 ± 1.33	1.7 ± 0.56	0.008
3rd	167.0 ± 35.25	3.5 ± 1.94	2.0 ± 0.72	0.015
4th	166.3 ± 35.55	4.1 ± 1.97	2.4 ± 0.81	0.009
5th	165.2 ± 36.83	5.2 ± 2.27	3.1 ± 1.26	0.007
6th	164.3 ± 36.19	6.1 ± 2.83	3.6 ± 1.48	0.008

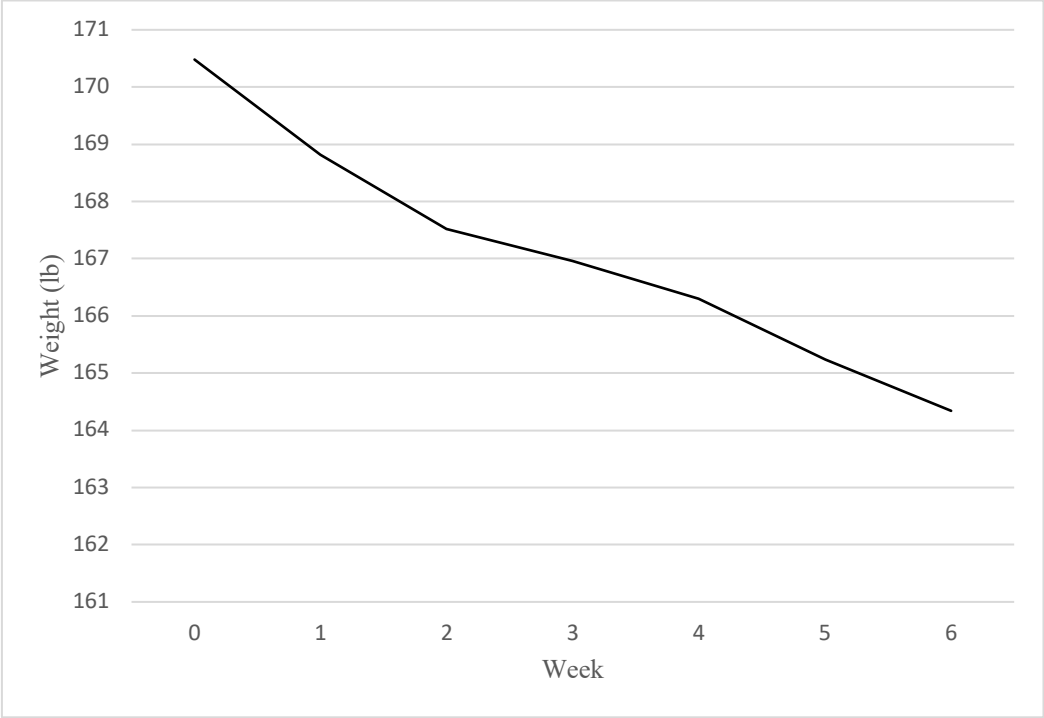


Figure 3. Change of Weight for Treatment

3.2.2 Cumulative Weight Difference

Cumulative Weight Difference =

Weight before treatment - weight after nth treatment

The values from Table 1 show that after the 1st week, the cumulative weight difference was 1.7 ± 0.99 lb (percent difference = 1.0 ± 0.52, p = 0.020). After the 2nd week, the difference was 3.0 ± 1.33 (percent difference = 1.7 ± 0.56, p = 0.008). After the 3rd week, the difference was 3.5 ± 1.94 (percent difference = 2.0 ± 0.72, p = 0.015). After the 4th week, the difference was 4.1 ± 1.97 (percent difference = 2.4 ± 0.81, p = 0.009). After the 5th week, the difference was 5.2 ± 2.27 (percent difference = 3.1 ± 1.26, p = 0.007). After the 6th week, the difference

was 6.1 ± 2.83 (percent difference = 3.6 ± 1.48, p = 0.008). Figure 4 represents the cumulative weight difference over the course of time with the 95% confidence intervals added. With each week showing $p < 0.05$ with a paired t-test, the weight loss is statistically significant.

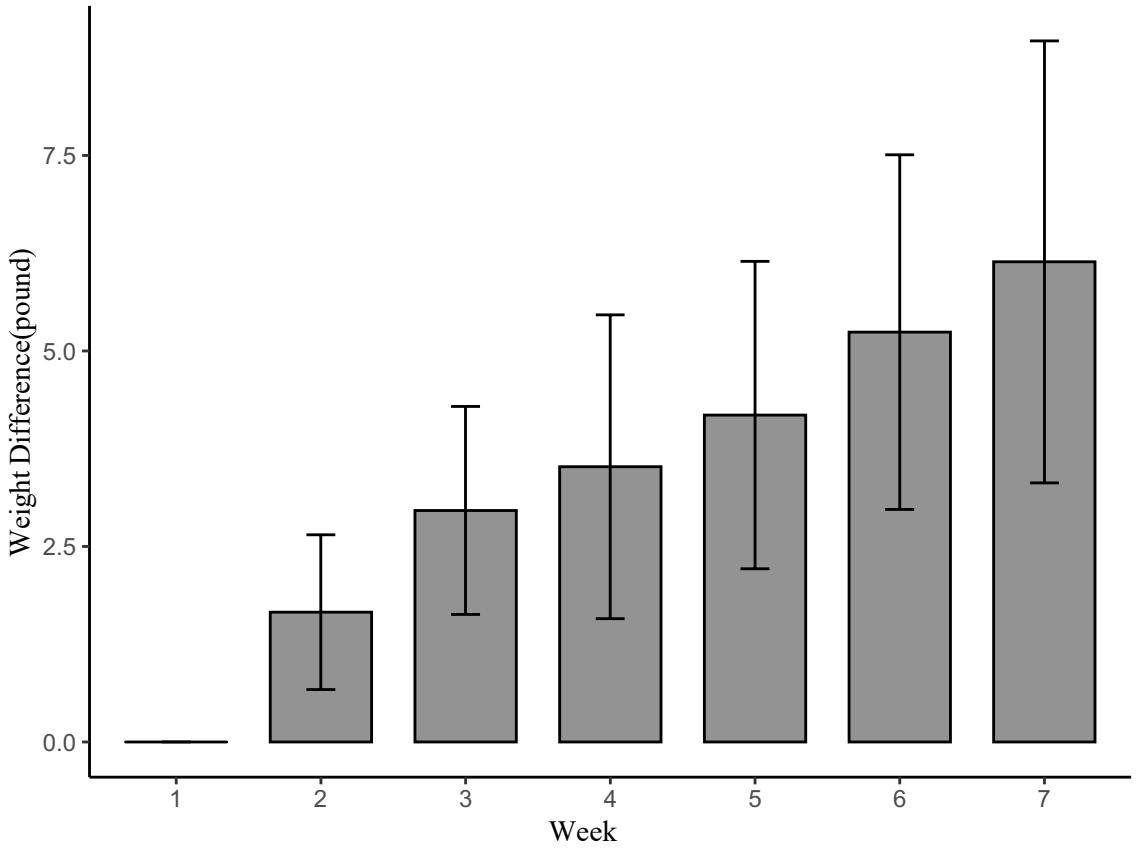


Figure 4. Cumulative weight difference for treatment

3.2.3 Quadratic Regression of Weight

Figure 5 outlines the trend of weight over time and shows that the changes follow a quadratic regression. This is highly likely due to the idea that weight loss is not perfectly linear and will reach a certain point of equilibrium where further treatments no longer induce any

additional weight loss. $Y = 170.25 - 1.3X + 0.057X^2$ closely models the weight loss trend where Y is the average weight and X is the Nth week of the treatment process for the 6-week process. The formula allows us to predict future weight values. The formula has a high correlation value with $R^2=0.9859$. $F(2,4) = 140.1$ with a p-value = 0.000198.

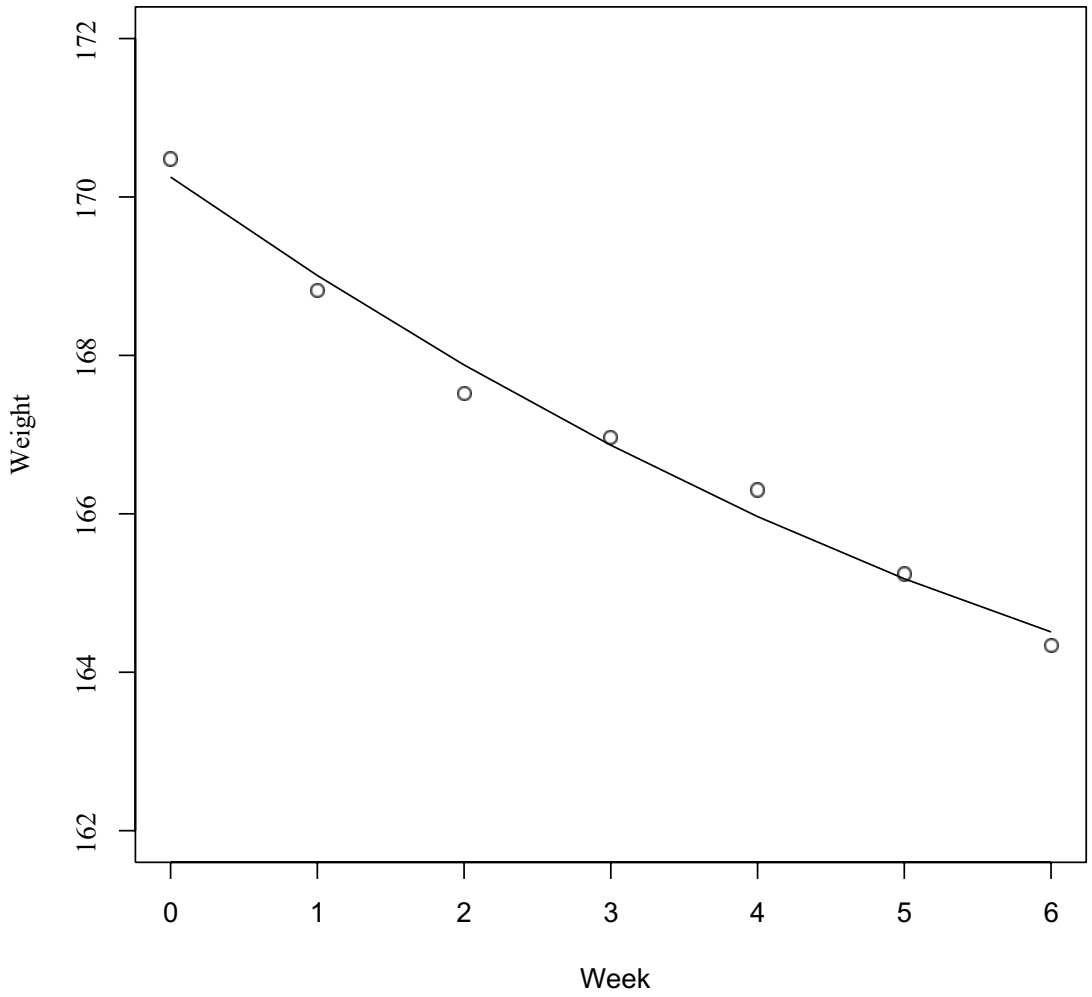


Figure 5. Line graph of quadratic regression

3.3 Change of Waist for Treatment

During the treatment process, the waist circumferences were measured at 3 different locations: High (H, 5 cm above the belly button), Middle (M, at the belly button), and Low (L, 5 cm below the belly button). Table 2 displays the averaged data points collected over the course of the 6 weeks with the cumulative waist circumference differences (D*) added and the p-value calculated by a paired sample t-Test. Figure 6 represents the data points of the average waist circumference only in a line graph.

Before the treatment process began, the average waist circumference, in inches, at the High, Middle, and Low positions were 38.0 ± 4.31 (H), 39.1 ± 4.00 (M), and 39.1 ± 4.63 (L). After the 1st week, the circumference changed to 37.1 ± 3.80 (H | D* = 0.84 ± 0.81, p-value = 0.081), 38.3 ± 3.63 (M | D* = 0.86 ± 0.85, p-value = 0.087), and 38.5 ± 4.68 (L | D* = 0.52 ± 0.32, p-value = 0.022). After the 2nd week, the circumference changed to 37.0 ± 3.81 (H | D* = 0.94 ± 0.68, p-value = 0.037), 38.2 ± 3.62 (M | D* = 0.94 ± 0.59, p-value = 0.023), and 38.6 ± 4.63 (L | D* = 0.42 ± 0.29, p-value = 0.033). After the 3rd week, the circumference changed to 36.8 ± 3.78 (H | D* = 1.22 ± 0.89, p-value = 0.038), 37.8 ± 3.58 (M | D* = 1.36 ± 0.89, p-value = 0.027), and 38.4 ± 4.50 (L | D* = 0.62 ± 0.39, p-value = 0.024). After the 4th week, the circumference changed to 36.8 ± 4.01 (H | D* = 1.14 ± 0.25, p-value = 0.001), 37.8 ± 3.89 (M | D* = 1.32 ± 0.44, p-value = 0.003), and 38.2 ± 4.85 (L | D* = 0.84 ± 0.36, p-value = 0.006). After the 5th week, the circumference changed to 36.2 ± 3.90 (H | D* = 1.74 ± 0.78, p-value = 0.008), 37.5 ± 3.84 (M | D* = 1.64 ± 0.86, p-value = 0.013), and 37.9 ± 4.99 (L | D* = 1.18 ± 0.41, p-value = 0.003). After the 6th week, the circumference changed to 36.2 ± 4.09 (H | D* = 1.78 ± 0.93, p-value = 0.013), 37.2 ± 3.94 (M | D* = 1.9 ± 0.83, p-value = 0.007), and 37.7 ±

4.82 (L | D* = 1.36 ± 0.22, p-value = 0.000). With p-values below 0.05, the changes in waist circumference are significant.

Table 2. Waist (H, M, L) change for the treatment

Position	Week	Waist	Difference*	p-value**
High	before	38.0 ± 4.31		
	1st	37.1 ± 3.80	0.84 ± 0.81	0.081
	2nd	37.0 ± 3.81	0.94 ± 0.68	0.037
	3rd	36.8 ± 3.78	1.22 ± 0.89	0.038
	4th	36.8 ± 4.01	1.14 ± 0.25	0.001
	5th	36.2 ± 3.90	1.74 ± 0.78	0.008
	6th	36.2 ± 4.09	1.78 ± 0.93	0.013
Middle	before	39.1 ± 4.00		
	1st	38.3 ± 3.63	0.86 ± 0.85	0.087
	2nd	38.2 ± 3.62	0.94 ± 0.59	0.023
	3rd	37.8 ± 3.58	1.36 ± 0.89	0.027
	4th	37.8 ± 3.89	1.32 ± 0.44	0.003
	5th	37.5 ± 3.84	1.64 ± 0.86	0.013
	6th	37.2 ± 3.94	1.9 ± 0.83	0.007
Low	before	39.1 ± 4.63		
	1st	38.5 ± 4.68	0.52 ± 0.32	0.022
	2nd	38.6 ± 4.63	0.42 ± 0.29	0.033
	3rd	38.4 ± 4.50	0.62 ± 0.39	0.024
	4th	38.2 ± 4.85	0.84 ± 0.36	0.006
	5th	37.9 ± 4.99	1.18 ± 0.41	0.003
	6th	37.7 ± 4.82	1.36 ± 0.22	0.000

* Cumulative Waist difference (before tx – after nth week)

** Paired Samples t-Test

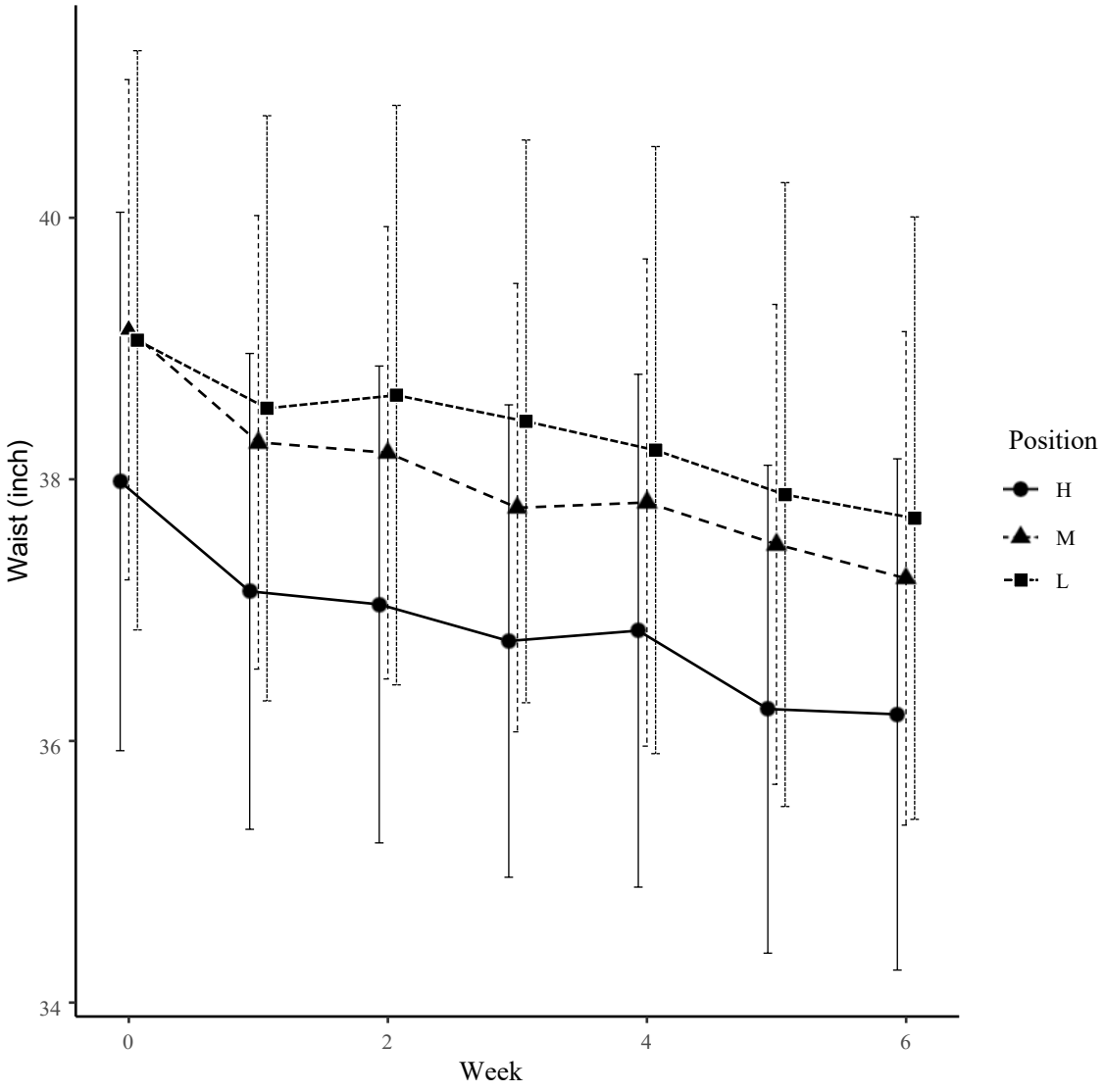


Figure 6. Line graph of Waist (H, M, L) for treatment.

3.4 Change of Body Fat for Treatment

Table 3 shows the changes of body fat percentage for each individual case before and after the treatment as well as the changes of the mean values with the p-value calculated by a paired sample t-Test. In Case 1, the percentage changed from 42.4 to 41.5, a difference of 0.9. In Case 2, the percentage changed from 22.8 to 22.0, a difference of 2.8. In Case 3, the percentage changed from 43.0 to 42.7, a difference of 0.3. In Case 4, the percentage changed from 33.0 to 31.8, a difference of 1.2. In Case 5, the percentage changed from 34.5 to 33.6, a difference of 0.9. For mean percentage, it changed from 35.1 ± 8.24 to 33.9 ± 9.12, a difference of 1.2 ± 0.95 (p-value = 0.044). With the p-value = 0.044, the change of body fat is significant. Figure 7 shows a bar graph of the before and after values for each of the individual cases. Figure 8 is a bar graph of the mean percentage of before and after with the 95% confidence intervals added. Figure 9 is a boxplot of the data points and lists the before treatment (Min: 22.8, Q1: 33.0, Median: 34.5, Q3: 42.4, Max: 43.0) and after values (Min: 20, Q1:31.8, Median: 33.6, Q3: 41.5, Max: 42.7).

Table 3. Body fat before and after treatment, and its difference

Case #	Before (%)	After (%)	Difference (%)
Case 1	42.4	41.5	0.9
Case 2	22.8	20.0	2.8
Case 3	43.0	42.7	0.3
Case 4	33.0	31.8	1.2
Case 5	34.5	33.6	0.9
Mean	35.1 ± 8.24	33.9 ± 9.12	1.2 ± 0.95
p-value*			0.044

* Paired Samples t-Test

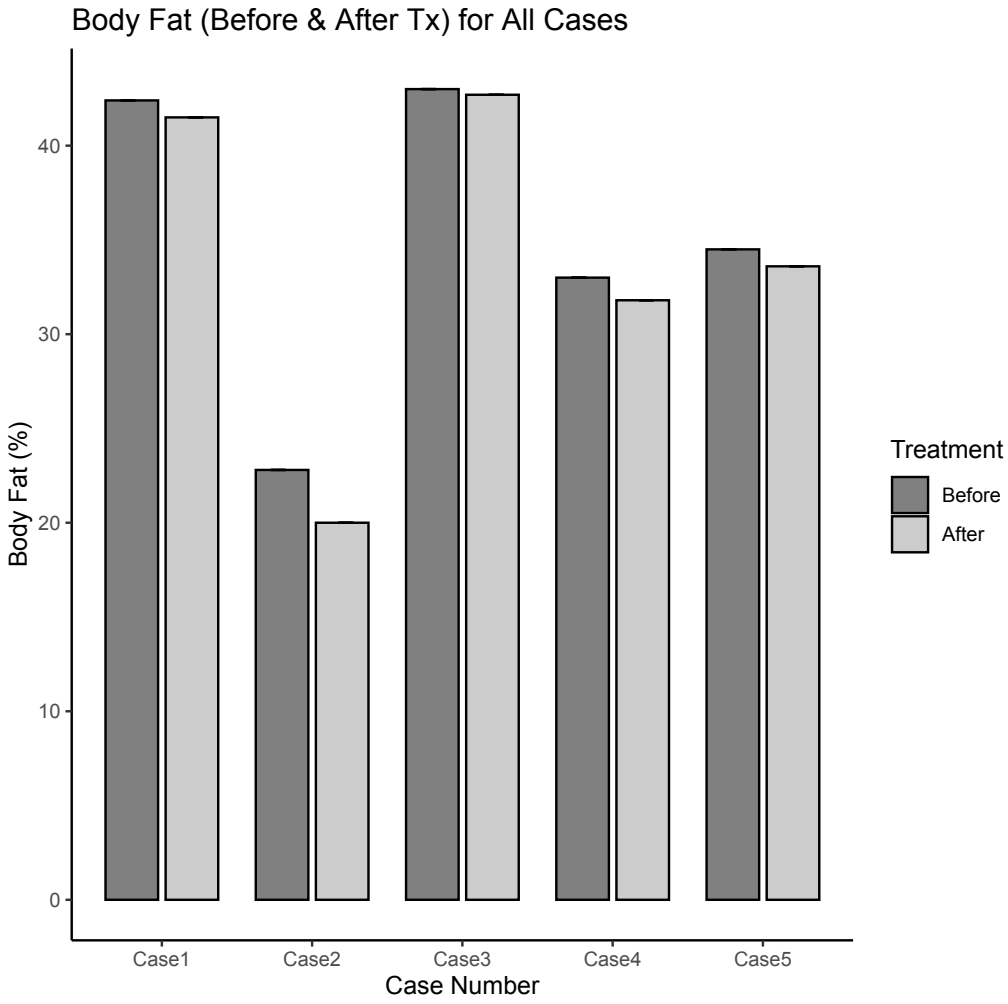


Figure 7. Bar graph of Body Fat for all cases.

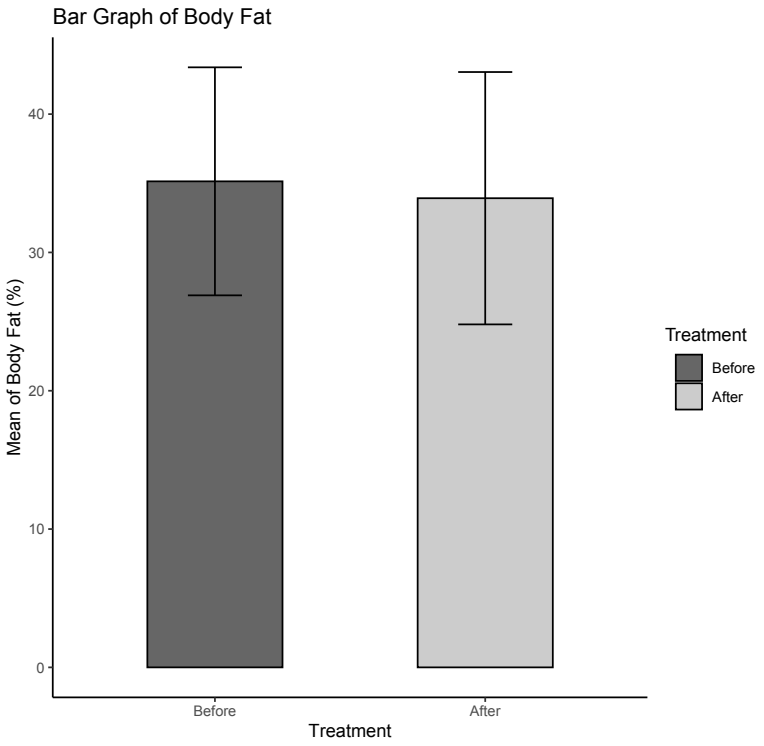


Figure 8. Bar graph of Body Fat before and after treatment.

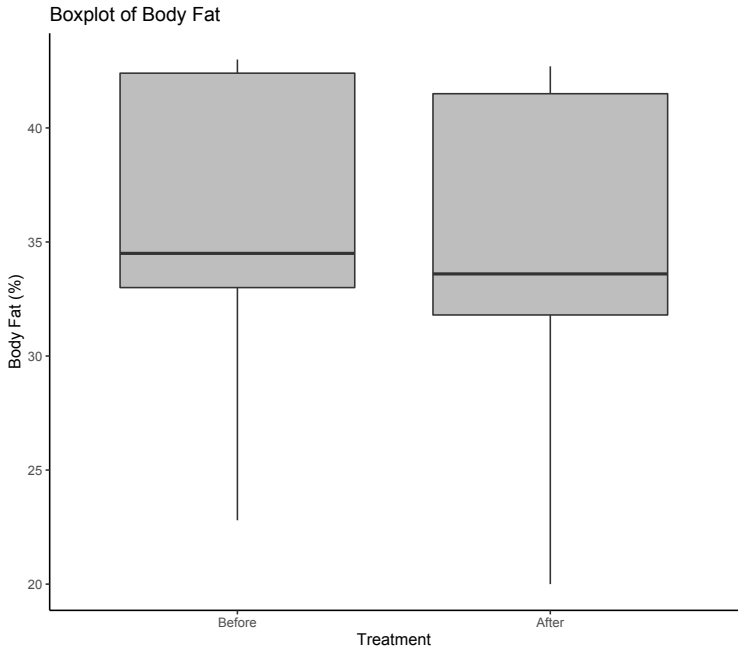


Figure 9. Boxplot of Body Fat before and after treatment.

3.5 Change of BMI for Treatment

Table 4 shows the before and after values of each case and the mean. For Case 1, the BMI changed from 29.50 to 28.70 (Difference: 0.80, Rate: 2.71%). For Case 2, the BMI changed from 28.50 to 26.60 (Difference: 1.90, Rate: 6.67%). For Case 3, the BMI changed from 37.12 to 36.15 (Difference: 0.97, Rate: 2.61%). For Case 4, the BMI changed from 25.78 to 24.80 (Difference: 0.98, Rate: 3.80%). For Case 5, the BMI changed from 26.09 to 25.23 (Difference: 0.86, Rate: 3.30%). The mean BMI changed from 29.4 ± 4.60 to 28.3 ± 4.65 (Difference: 1.1 ± 0.45, Rate: 3.8 ± 1.66, p-value 0.059). Given that p is greater than 0.05, it cannot be concluded that BMI change is significant. Figure 10 shows a bar graph of BMI before and after for all the cases. Figure 11 displays a bar graph of the mean BMI before and after treatment with the 95% confidence intervals. Figure 12 shows a box plot of the data points and lists the before treatment (Min: 25.78, Q1: 26.09, Median: 28.50, Q3: 29.50, Max: 37.12) and the after values (Min: 24.80, Q1: 25.23, Median: 26.60, Q3: 28.70, Max: 36.15).

Table 4. BMI before and after treatment, and its difference and rate

ID #	Before	After	Difference	Rate (%)
Case 1	29.50	28.70	0.80	2.71
Case 2	28.50	26.60	1.90	6.67
Case 3	37.12	36.15	0.97	2.61
Case 4	25.78	24.80	0.98	3.80
Case 5	26.09	25.23	0.86	3.30
Mean	29.4 ± 4.60	28.3 ± 4.65	1.1 ± 0.45	3.8 ± 1.66
P-value*			0.059	

* Wilcoxon Signed Rank Test

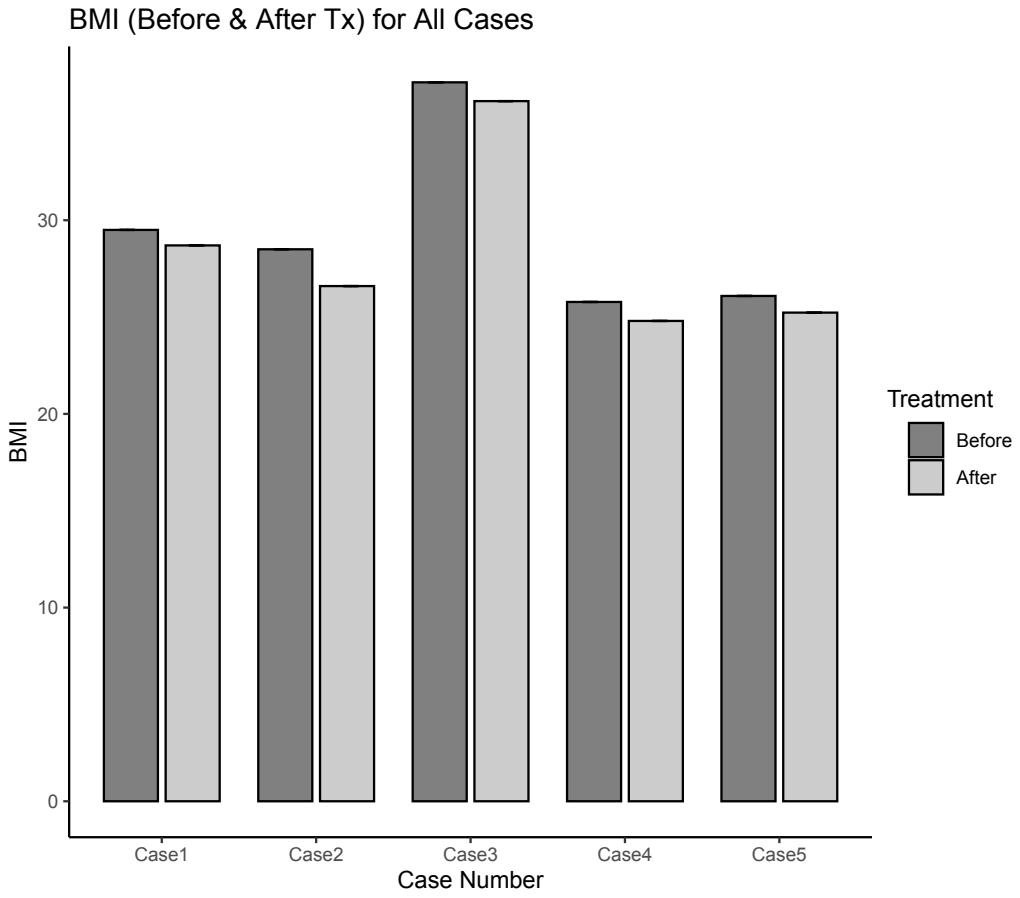


Figure 10. Bar graph of BMI before and after treatment for all Cases.

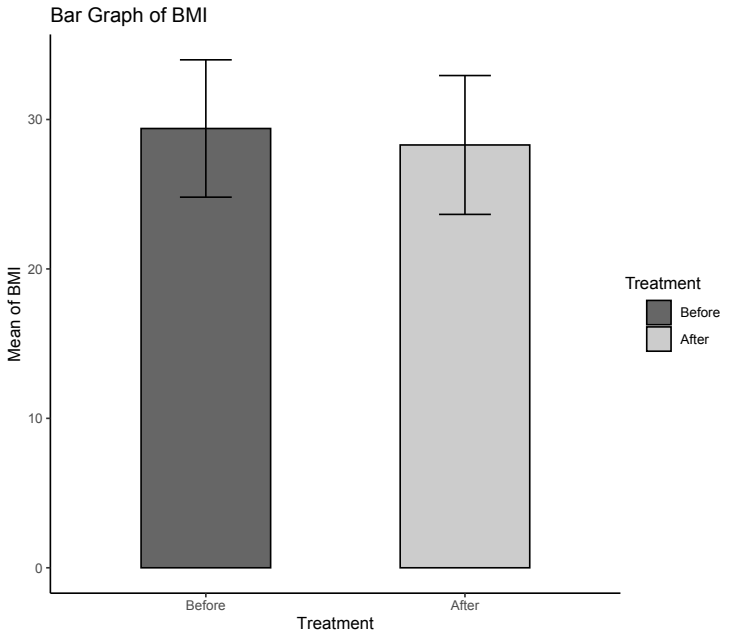


Figure 11. Bar graph of BMI before and after treatment.

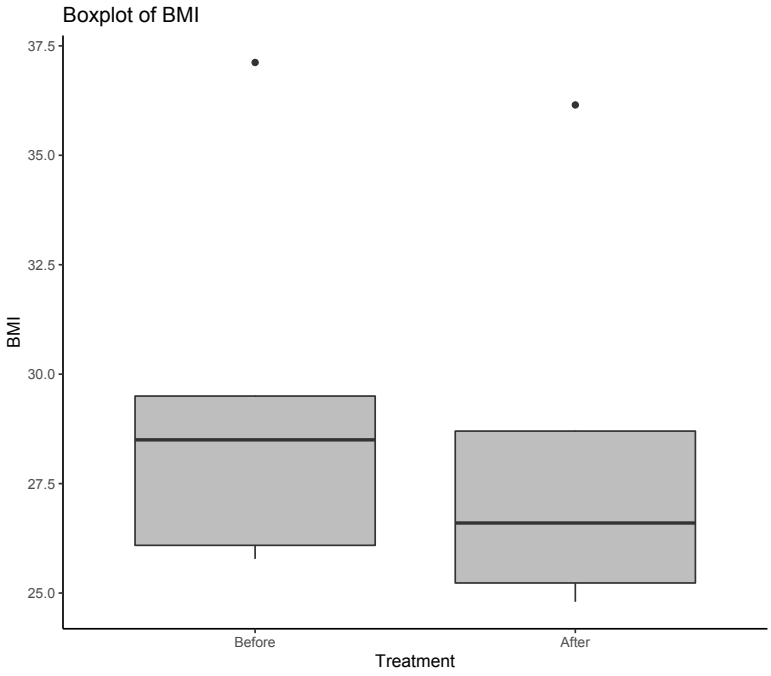


Figure 12. Boxplot of BMI before and after treatment.

IV. DISCUSSION

The results show that the treatment process of using Psyllium Husk Powder in combination with Auricular Acupressure to be effective at reducing body weight. Given that the paired t-tests calculated the p-values to be less than 0.05, it can be concluded that the results are significant. To ensure that the effect of the treatment combination was mainly responsible for the observed results, participants did not change any lifestyle habits or dietary habits to ensure that several possible variables could be eliminated. Increased physical activity in the form of exercise or a change in nutrition could have skewed and affected the outcomes, making analyzing the data complicated.

A point of concern for this experiment was the possibility that the combination of Auricular Acupressure and Psyllium Husk Powder as a dietary supplement would not produce benefits due to some unknown interaction, even possible health deficits although highly unlikely. Since the mechanisms at which Auricular Acupressure and dietary supplements achieve weight loss are different, there should be little to no subtractive overlap and harmful interaction. It was already established that when using each method separately, each form of intervention did see weight reductions[33, 34, 28,41, 42, 44]. Auricular Acupressure induces a feeling of satiety which reduces the amount of food intake while Psyllium Husk Powder slows down the nutrition absorption process, ultimately reducing the total amount of calories taken in from the chyme. The combination of a reduced amount of food intake with decreased nutritional absorption would lead to a net negative caloric intake, which is a simple and straightforward method of weight loss. Short term weight loss should be expected, and that was observed with the patients. However, long term studies may run into issues.

Based on the formula from the quadratic regression, patients receiving the treatment would lose a max average of 7.16 lb after 11.4 weeks. The graph shows that additional weight loss will not continue while following the treatment plan. However, given the lack of long-term studies, it cannot be certainly concluded that weight loss stops after 11 weeks. In order for additional weight loss to occur, a new variable would be needed to be introduced.

Future trials would likely need to monitor more closely the health and physical status of the participants if the length of the treatment process were to be increased. Patients would need to make sure that their health does not become compromised due to the lack of nutrition. However, introducing nutrition plans for the participants would likely hamper results since changes of dietary habits in order to protect the individuals would introduce more interacting variables. The initial conditions set for the trials such as unchanging habits would be negated. Also, Psyllium Husk Powder has cold characteristics as a cold herb that would negatively affect health in certain participants.

The current experiment ran into several issues at its inception that could not be resolved due to the COVID-19 pandemic. Given the severity of the public health crisis, the number of available participants were reduced and the scope and scale of the trial were downsized. Initially, the experiment was to be a RCT that would examine the effects of the combination of using Auricular Acupressure and Psyllium Husk Powder and the extent of which each factor affected the final outcome. If possible, it would have been beneficial to run 3 additional groups of participants to make the experiment more thorough: a sham group that would receive an Earseed that had no effect and a dietary supplement that had no negative or positive effect to health; a group that would receive the Vaccaria Seeds placed at the experimental locations but a dietary supplement that had no net effect on health; and a group that would receive an Earseed with no

effect but Psyllium Husk Powder as the dietary supplement. It may have been possible to analyze the data to see how much of an effect that each introduced variable has on the outcome. Due to the two variables in this study, it is difficult to determine the extent at which each variable affects the final outcome with just one group. Increasing the number of participants would also reduce any possible bias that could arise due to the small sample size and other factors such as gender, age, and ethnicity.

Another future approach for a study of similar nature would be to examine the appropriate duration that would maximize the benefits while reducing the risk of possible health concerns. The practical application of having a proven methodology of losing weight and body fat without changing any lifestyle or dietary habits can be significant. This experiment can lead to a breakthrough that would allow anyone to safely begin a personally tailored weight loss program that uses Auricular Acupressure and Psyllium Husk Powder as a launch pad. The beginning of any diet program is the hardest due to great changes in habits and the issue of constant hunger. However, with this experiment showing that people can still lose weight without changing anything from day to day yet attain satiety, those who are working to lose body weight can ease into their new programs and build sustainable and manageable habits. The long-term outcomes would show significant benefits and program adherence.

V. CONCLUSION

The combination of using Auricular Acupressure with Psyllium Husk Powder shows that it is successful in reducing body weight and body fat. All participants showed significant results without changing any lifestyle or dietary habits during the 6-week process. The average body weighed decreased from 170.5 ± 37.09 lb to 164.3 ± 36.19, a difference of 6.1 ± 2.83 lb ($p = 0.008$). The waist circumference for 5 cm above the belly button changed from 38.0 ± 4.31inches to 36.2 ± 4.09, a difference of 1.78 ± 0.93 ($p = 0.013$); for at the belly button from 39.1 ± 4.00 to 37.2 ± 3.94, a difference of 1.9 ± 0.83 ($p= 0.007$); and for 5 cm below the belly button from 39.1 ± 4.63 to 37.7 ± 4.82, a difference of 1.36 ± 0.22 ($p = 0.000$). The average body fat percentage changed from 35.1 ± 8.24 to 33.9 ± 9.12, a difference of 1.2 ± 0.95 ($p = 0.044$). The average BMI changed from 29.4 ± 4.60 to 28.3 ± 4.65, a difference of 1.1 ± 0.45 ($p = 0.059$). The implications for this study indicate that it can lead to a new breakthrough in the weight loss industry. A safe and easy start allows people to lose weight safely and begin smoother transitions into new lifestyle and dietary habits with lower amounts of stress and fatigue, resulting in better long-term outcomes and success.

REFERENCES

1. Steinberger, J., Jacobs, D. R., Raatz, S., Moran, A., Hong, C. P., & Sinaiko, A. R. (2005). Comparison of body fatness measurements by BMI and skinfolds vs dual energy X-ray absorptiometry and their relation to cardiovascular risk factors in adolescents. *International journal of obesity* (2005), 29(11), 1346–1352. https://doi.org/10.1038/sj.ijo.0803026

2. World Health Organization. (2020, April 1). *Obesity and overweight.* https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight#:~:text=Some%20recent%20WHO%20global%20estimates,%25%20of%20women)%20were%20overweight.

3. Hales, C. M., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2020). Prevalence of Obesity and Severe Obesity Among Adults: United States, 2017-2018. *NCHS Data Brief* No. 360. https://www.cdc.gov/nchs/products/databriefs/db360.htm#:~:text=The%20age%2Dadjusted%20prevalence%20of%20obesity%20among%20U.S.%20adults%20was,age%20group%20(Figure%201).

4. Hruby, A., & Hu, F. B. (2015). The Epidemiology of Obesity: A Big Picture. *PharmacoEconomics*, 33(7), 673–689.

5. Gorina, Y., Hoyert, D. Lentzner, H. & Goulding, M. (2005). Trends in Causes of Death among Older Persons in the United States. *Aging Trends* No. 6. https://www.cdc.gov/nchs/data/ahcd/agingtrends/06olderpersons.pdf

6. Jaul, E., & Barron, J. (2017). Age-Related Diseases and Clinical and Public Health Implications for the 85 Years Old and Over Population. *Frontiers in public health*, 5, 335. https://doi.org/10.3389/fpubh.2017.00335

7. Kim T. N. (2018). Elderly Obesity: Is It Harmful or Beneficial?. *Journal of obesity & metabolic syndrome*, 27(2), 84–92. https://doi.org/10.7570/jomes.2018.27.2.84

8. Nordmann, A. J., Nordmann, A., Briel, M., Keller, U., Yancy, W. S. Jr, Brehm, B. J., & Bucher, H. C. (2006). Effects of low-carbohydrate vs low-fat diets on weight loss and cardiovascular risk factors: a meta-analysis of randomized controlled trials. *Arch Intern Med*, 166, 285–93

9. Makris, A.P., & Foster, G. D. (2005). Dietary Approaches to the Treatment of Obesity. *Psychiatric Clinics of North America*. Vol. 28. pp. 117–39.

10. Look AHEAD Research Group, & Wing, R.R. (2010). Long-term effects of a lifestyle intervention on weight and cardiovascular risk factors in individuals with type 2 diabetes mellitus: four-year results of the Look AHEAD trial. *Arch Intern Med*. 170:1566–75

11. Cobourn, C., Mumford, D., Chapman, M. A., & Wells, L. (2010). Laparoscopic gastric banding is safe in outpatient surgical centers. *Obesity Surgery*, 20, 415-422.

12. Wolfe, B. M., Kvach, E., & Eckel, R. H. (2016). Treatment of Obesity: Weight Loss and Bariatric Surgery. *Circulation Research*, 118(11), 1844–1855. https://doi.org/10.1161/CIRCRESAHA.116.307591

13. U.S Department of Agriculture, & U.S. Department of Health and Human Services. (2010). Dietary Guidelines for Americans. *Washington, DC: U.S. Government Printing Office; Dec, 2010.*

14. Nordmann, A. J., Nordmann, A., Briel, M., Keller, U., Yancy, W. S. Jr, Brehm, B. J., & Bucher, H. C. (2006). Effects of low-carbohydrate vs low-fat diets on weight loss and cardiovascular risk factors: a meta-analysis of randomized controlled trials. *Arch Intern Med, 166,* 285–93.

15. Haslam, R. (2015). Obesity: current and emerging drug treatments. *The Pharmaceutical Journal.*

16. Kumar, R.B., & Aronne, L. J. (2017) Pharmacologic Treatment of Obesity. *Endotext [Internet]. South Dartmouth (MA): MDText.com*, Inc.; 2000-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK279038

17. Chan, E. W., He, Y., & Chui, C. S. (2013). Efficacy and safety of lorcaserin in obese adults: a meta-analysis of 1-year randomized controlled trials (RCTs) and narrative review on short-term RCTs. *Obes Rev, 14(5),* 383–392.

18. Smith, S. R., Weissman, N. J., Anderson, C. M., Sanchez, M., Chuang, E., Stubbe, S., Bays, H., & Shanahan, W.R. (2010). Behavioral M, Lorcaserin for O, Obesity Management Study G. Multicenter, placebo-controlled trial of lorcaserin for weight management. *N Engl J Med, 363,* 245-256.

19. American Society for Metabolic and Bariatric Surgery. (2018, June). *Estimate of Bariatric Surgery Numbers, 2011-2018.* https://asmbs.org/resources/estimate-of-bariatric-surgery-numbers

20. Adams, T. D., Davidson, L. E., & Litwin, S. E. (2017). Weight and Metabolic Outcomes 12 Years after Gastric Bypass. *N Engl J Med 2017; 377(12):*1143–55. 10.1056/NEJMoa1700459

21. American Society for Metabolic and Bariatric Surgery. (2020, October). *Who is a Candidate for Bariatric Surgery.* https://asmbs.org/patients/who-is-a-candidate-for-bariatric-surgery

22. Obesity Coverage. (2020, June 4). *Weight Loss Surgery Insurance Coverage and Costs*. https://www.obesitycoverage.com/weight-loss-surgery-insurance-coverage-and-

costs/#:~:text=The%20average%20cost%20of%20gastric,will%20cover%20weight%20loss%20surgery.

23. 박원형, 차윤엽, 송윤경, 박태용, 김호준, 정원석, . . .고성규. (2014). 비만 변증 연구에 대한 고찰. 한방재활의학과학회지, 24(2), 83-93.

24. Bo, W., Fangyu, L., & Gang, C. (2007). Acupuncture treatment of obesity with magnetic needles - A report of 100 cases. *Journal of Traditional Medicine*. 27(1):26-27.

25. Zhang, K., Zhou, S., Wang, C., Xu, H., & Zhang, L. (2018). Acupuncture on Obesity: Clinical Evidence and Possible Neuroendocrine Mechanisms. *Evidence-based complementary and alternative medicine: eCAM*, 2018, 6409389. https://doi.org/10.1155/2018/6409389

26. Güçel, F., Bahar, B., Demirtas, C., Mit, S., & Cevik, C. (2012). Influence of acupuncture on leptin, ghrelin, insulin and cholecystokinin in obese women: a randomised, sham-controlled preliminary trial. *Acupuncture in Medicine: Journal of the British Medical Acupuncture Society*, 30(3), 203–207.

27. Gori, L., & Firenzuoli, F. (2007). Ear acupuncture in European traditional medicine. *Evidence-based complementary and alternative medicine: eCAM*, 4(Suppl 1), 13–16.

28. Huang, C. F., Guo, S. E., & Chou, F. H. (2019). Auricular acupressure for overweight and obese individuals: A systematic review and meta-analysis. *Medicine*, 98(26), e16144. https://doi.org/10.1097/MD.0000000000016144

29. Kim, Y. J., Kim, S. H., Lee, H. J., & Kim, W. Y. (2018). Infectious Adverse Events Following Acupuncture: Clinical Progress and Microbiological Etiology. *Journal of Korean Medical Science*, 33(24), e164. https://doi.org/10.3346/jkms.2018.33.e164

30. 차현수, & 박효정. (2016). 이압요법이 복부비만 성인여성에게 미치는 효과= Effects of Auricular Acupressure on Obesity in Women with Abdominal Obesity. 대한간호학회지, 46(2).249-259.

31. Ito, H., Yamada, O., Kira, Y., Tanaka, T., & Matsuoka, R. (2015). The effects of auricular acupuncture on weight reduction and feeding-related cytokines: a pilot study. *BMJ Open Gastroenterology*, 2(1), e000013. https://doi.org/10.1136/bmjgast-2014-000013

32. Shiraishi, T., Onoe, M., Kojima, T., Sameshima, Y., & Kageyama, T. (1995). Effects of auricular stimulation on feeding-related hypothalamic neuronal activity in normal and obese rats. *Brain research bulletin*, 36(2), 141–148.

33. Darbandi, M., Darbandi, S., Owji, A.A. et al. (2014). Auricular or body acupuncture: which one is more effective in reducing abdominal fat mass in Iranian men with obesity: a randomized clinical trial. *J Diabetes Metab Disord* 13, 92. https://doi.org/10.1186/s40200-014-0092-3

34. Yeh, T. L., Chen, H. H., Pai, T. P., Liu, S. J., Wu, S. L., Sun, F. J., & Hwang, L. C. (2017). The Effect of Auricular Acupoint Stimulation in Overweight and Obese Adults: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Evidence-based complementary and alternative medicine*: *eCAM*, 2017, 3080547. https://doi.org/10.1155/2017/3080547

35. Institute of Medicine, Food and Nutrition Board. (2002) Dietary Reference Intakes: Energy, Carbohydrates, Fiber, Fat, Fatty Acids Cholesterol, Protein and Amino Acids. Washington, DC: *National Academies Press*; 2002.

36. Slavin, J. L. (2005). Dietary fiber and body weight. *Nutrition*. 2005 Mar;21(3):411-8. doi: 10.1016/j.nut.2004.08.018. PMID: 15797686

37. McRorie, J. W., Jr. (2015). Evidence-Based Approach to Fiber Supplements and Clinically Meaningful Health Benefits, Part 1: What to Look for and How to Recommend an Effective Fiber Therapy. *Nutrition today*, 50(2), 82–89. https://doi.org/10.1097/NT.0000000000000082

38. Verma, A., & Mogra, R. (2013). Psyllium (Plantago ovata) Husk: A Wonder Food for Good Health. *International Journal of Science and Research* (IJSR), Index Copernicus Value (2013): 6.14. https://www.ijsr.net/archive/v4i9/SUB158459.pdf

39. McRorie, J. W., Jr (2015). Evidence-Based Approach to Fiber Supplements and Clinically Meaningful Health Benefits, Part 2: What to Look for and How to Recommend an Effective Fiber Therapy. *Nutrition today*, 50(2), 90–97. https://doi.org/10.1097/NT.0000000000000089

40. Lambeau, K. V., & McRorie, J. W., Jr (2017). Fiber supplements and clinically proven health benefits: How to recognize and recommend an effective fiber therapy. *Journal of the American Association of Nurse Practitioners*, *29*(4), 216–223. https://doi.org/10.1002/2327-6924.12447

41. Bergmann, J. F., Chassany, O., Petit, A et al. (1992). Correlation between echographic gastric emptying and appetite: influence of psyllium. *Gut* 1992; 33: 1042-1043.

42. Cicero, A., Derosa, G., Bove, M., Imola, F., Borghi, C., & Gaddi, A. (2010). Psyllium improves dyslipidemia, hyperglycemia and hypertension, while guar gum reduces body weight more rapidly in patients affected by metabolic syndrome following an AHA Step 2 diet. *Mediterranean Journal of Nutrition and Metabolism*, 3, 47–54.

43. de Bock, M., Derraik, J. G., Brennan, C. M., Biggs, J. B., Smith, G. C., Cameron-Smith, D., Wall, C. R., & Cutfield, W. S. (2012). Psyllium supplementation in adolescents improves fat distribution & lipid profile: a randomized, participant-blinded, placebo-controlled, crossover trial. *PloS one*, *7*(7), e41735. https://doi.org/10.1371/journal.pone.0041735

44. Anderson, J., Floore, T., Geil, P., Spencer, D., & Balm, T. (1991). Hypocholesterolemic effects of different bulk-forming hydrophilic fibers as adjuncts to dietary therapy in mild to moderate hypercholesterolemia. *Archives of Internal Medicine*, 151, 1597–1602.

45. Park, T. G. (2019). 신장 강화하는 '오자' 시리즈 3 차전자. 푸드&메드. http://www.foodnmed.com/news/articleView.html?idxno=18225

46. R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

Appendix A

Informed Consent Form

You are invited to participate in a research study about "The Effects of Auricular Acupressure and Psyllium Husk Powder on Weight Loss: A Case Series"

The goal of this study is to examine whether the combination of Auricular Acupressure and Psyllium Husk Powder will reduce body weight and waist circumferences.

The study design is that participants will receive auricular acupressure twice a week and will be asked to press on the acupoints 20 times 30 minutes prior to eating meals. They will receive Psyllium Husk Powder and be asked to consume the mixture according to the instructions given: 6 oz of room temperature water with 5 grams of Psyllium Husk Powder. Additional 8 oz of water needs to be consumed after drinking the initial mixture. Possible side effects, though unlikely to happen, that may be experienced during the duration of the study include: diarrhea, constipation, bloating, and loss of appetite. Body measurements will be taken each week during the study. Body weight and waist circumference at belly button, 5 cm above the belly button, and 5 cm below the belly button will be recorded for data analysis at the end. All personal information will not be shared with others and will remain confidential.

This study is being conducted by Jeong Hye Choi, L.Ac.

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not, all the services you receive at this clinic will continue and nothing will change. If you choose not to participate in this research project, you will be offered the treatment that is routinely offered in this clinic. You may change your mind later at any time and stop participating even if you agreed earlier.

Participating in this study may not benefit you directly, but it will help to enrich the knowledge on Acupuncture and Asian Medicine.

By participating in this research, it is possible that you will be at greater risk than you would otherwise be. There is, for example, a risk that your condition will not get better and that the new medicine or treatment doesn't work even as well as the old one. While the possibility of this happening is very low, you should still be aware of the possibility.

The information you will share with us if you participate in this study will be kept completely confidential to the full extent of the law. The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will be put away and no one but the researchers will be able to see it. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone except Jeong Hye Choi, L.Ac.

If you have any questions about this study, please contact Jeong Hye Choi 1-657-253-8839 and tripletouch64@gmail.com. If you have any questions or concerns regarding your rights as a subject in this study, you may contact Dr. Ki Haeng Cho, Chair of the South Baylo University Institutional Review Board (IRB) at 213-738-0712 or khcho@southbaylo.edu.

YOU WILL BE GIVEN A COPY OF THIS FORM WHETHER OR NOT YOU AGREE TO PARTICIPATE.

Certificate of Consent:

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Name of Participant (Print)	Name of Witness (Print)
Signature of Participant	Signature of Witness
Date: Day/Month/Year	Date: Day/Month/Year

Statement by the researcher/person taking consent:

I have accurately explained the information sheet to the potential participant. I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant

_____

Print Name Researcher (Print)

_____

Signature of Researcher

_____

Date: Day/Month/Year

Formulario de consentimiento informado

Está invitado a participar en un estudio de investigación sobre "Los efectos de la acupresión auricular y el polvo de cáscara de psyllium en la pérdida de peso: una serie de casos"

El objetivo de este estudio es examinar si la combinación de acupresión auricular y polvo de cáscara de psyllium reducirá el peso corporal y la circunferencia de la cintura.

El diseño del estudio es que los participantes recibirán acupresión auricular dos veces por semana y se les pedirá que presionen los puntos de acupuntura 20 veces 30 minutos antes de comer. Recibirán polvo de cáscara de psyllium y se les pedirá que consuman la mezcla de acuerdo con las instrucciones dadas: 6 oz de agua a temperatura ambiente con 5 gramos de polvo de cáscara de psyllium. Se deben consumir 8 oz adicionales de agua después de beber la mezcla inicial. Los posibles efectos secundarios, aunque es poco probable que ocurran, que se pueden experimentar durante la duración del estudio incluyen: diarrea, estreñimiento, hinchazón y pérdida de apetito. Se tomarán medidas corporales cada semana durante el estudio. El peso corporal y la circunferencia de la cintura en el ombligo, 5 cm por encima del ombligo y 5 cm por debajo del ombligo se registrarán para el análisis de datos al final. Toda la información personal no se compartirá con otros y seguirá siendo confidencial.

Este estudio está siendo realizado por Jeong Hye Choi, L.Ac.

Su participación en esta investigación es completamente voluntaria. Depende de usted participar o no. Ya sea que elija participar o no, todos los servicios que reciba en esta clínica continuarán y nada cambiará. Si opta por no participar en este proyecto de investigación, se le ofrecerá el tratamiento que habitualmente se ofrece en esta clínica. Puede cambiar de opinión más tarde en cualquier momento y dejar de participar incluso si estuvo de acuerdo antes.

Es posible que la participación en este estudio no lo beneficie directamente, pero ayudará a enriquecer los conocimientos sobre acupuntura y medicina asiática.

Al participar en esta investigación, es posible que corra un riesgo mayor de lo que estaría de otra manera. Existe, por ejemplo, el riesgo de que su afección no mejore y de que el nuevo medicamento o tratamiento no funcione tan bien como el anterior. Si bien la posibilidad de que esto suceda es muy baja, aún debe estar consciente de la posibilidad.

La información que compartirá con nosotros si participa en este estudio se mantendrá completamente confidencial con todo el alcance de la ley. La información que recopilemos de este proyecto de investigación se mantendrá confidencial. La información sobre usted que se recopilará durante la investigación se guardará y nadie más que los investigadores podrá verla. Cualquier información sobre usted tendrá un número en lugar de su nombre. Solo los investigadores sabrán cuál es su número y guardaremos esa información con candado y llave. No se compartirá ni se entregará a nadie excepto a Jeong Hye Choi, L.Ac.

Si tiene alguna pregunta sobre este estudio, comuníquese con Jeong Hye Choi al 1-657-253-8839 y tripletouch64@gmail.com. Si tiene alguna pregunta o inquietud con respecto a sus derechos como sujeto de este estudio, puede comunicarse con el Dr. Ki Haeng Cho, presidente de la Junta de Revisión Institucional (IRB) de la Universidad de South Baylo al 213-738-0712 o khcho@southbaylo.edu.

SE LE DARÁ UNA COPIA DE ESTE FORMULARIO YA ESTÉ DE ACUERDO O NO PARTICIPAR.

Certificado de consentimiento:

He leído la información anterior o me la han leído. He tenido la oportunidad de hacer preguntas al respecto y todas las preguntas que he formulado han sido respondidas a mi satisfacción. Doy mi consentimiento para participar voluntariamente como participante en esta investigación.

Nombre del participante (en letra de imprenta)	Nombre del testigo (letra de imprenta)
Firma del participante	Firma del testigo
Fecha: día / mes / año	Fecha: día / mes / año

Declaración del investigador / persona que toma el consentimiento:

Le he explicado con precisión la hoja de información al posible participante. Confirmo que se le dio al participante la oportunidad de hacer preguntas sobre el estudio, y que todas las preguntas formuladas por el participante han sido respondidas correctamente y lo mejor que he podido. Confirmo que la persona no ha sido obligada a dar su consentimiento y que el consentimiento se ha dado libre y voluntariamente.

Se ha proporcionado una copia de este ICF al participante

_____

Imprimir Nombre Investigador

(Imprimir)

_____

Firma del investigador

_____

Fecha: día / mes / año

사전 동의양식

귀하는 귀의 지압과 차전자피 분말이 체중 감소에 미치는 영향 : 사례 시리즈 연구에 참여하도록 초대 받았습니다.

이 연구의 목적은 귀의 지압과 차전자피 분말의 조합이 체중과 허리 둘레를 줄이는지 여부를 조사하는 것입니다. 연구 설계는 참가자들이 일주일에 두 번 귀 지압을 받고 식사를하기 30 분 전에 경혈을 20 번 누르도록 요청받는 것입니다. 참가자들은 차전자피 분말을 받고 주어진 지침에 따라 혼합물을 섭취하도록 요청받습니다 : 실온의 물 6 온스와 차전자피 분말 5g. 초기 혼합물을 마신 후에는 8 온스의 물을 추가로 섭취해야합니다. 연구 기간 동안 발생할 수있는 부작용은 거의 없지만 설사, 변비, 팽만감, 식욕 부진 등이 있을 수 있습니다. 연구 기간 동안 매주 신체 측정이 이루어집니다. 배꼽의 체중과 허리 둘레, 배꼽 위 5cm, 배꼽 아래 5cm 는 마지막 데이터 분석을 위해 기록됩니다. 모든 개인 정보는 다른 사람과 공유되지 않으며 기밀로 유지됩니다.

이 연구는 최정혜, L.Ac.에 의해서 이루어 집니다.

이 연구에 대한 귀하의 참여는 전적으로 자발적입니다. 참여 여부는 귀하의 선택입니다. 참여 여부에 관계없이 이 클리닉에서받는 모든 서비스는 계속되며 아무것도 변경되지 않습니다. 이 연구 프로젝트에 참여하지 않기로 선택하면 이 클리닉에서

일상적으로 제공되는 치료가 제공됩니다. 나중에 언제든지 마음을 바꾸고 일찍 동의하더라도 참여를 중단 할 수 있습니다.

이 연구에 참여하는 것은 귀하에게 직접적으로 도움이 되지 않을 수 있지만 침술 및 한의학에 대한 지식을 풍부하게하는 데 도움이 될 것입니다. 이 연구에 참여하면 상태가 나아지지 않을 가능성이 있으며 새로운 약이나 치료법이 기존 약만큼 효과가 없을 수도 있습니다. 이런 일이 발생할 가능성은 매우 낮지 만 여전히 그 가능성을 알고 있어야합니다.

이 연구에 참여하는 경우 귀하가 저희와 공유 할 정보는 법의 모든 범위에서 완전히 기밀로 유지됩니다. 이 연구 프로젝트에서 수집한 정보는 기밀로 유지됩니다. 연구 중에 수집되는 귀하에 대한 정보는 삭제되며 연구자 외에는 아무도 볼 수 없습니다. 귀하에 관한 모든 정보에는 귀하의 이름 대신 번호가 표시됩니다. 연구원 만이 귀하의 번호가 무엇인지 알 수 있으며 우리는 해당 정보를 자물쇠와 열쇠로 잠글 것입니다. 최정혜, L.Ac.를 제외한 누구와도 공유하거나 제공하지 않습니다.

이 연구에 대해 궁금한 점이 있으면 최정혜 1-657-253-8839 및 tripletouch64@gmail.com 으로 문의하십시오. 이 연구에서 주제로서의 귀하의 권리와 관련하여 질문이나 우려 사항이있는 경우 사우스 베일로 대학 기관 검토위원회 (IRB)

의장 인 조기행 박사에게 213-738-0712 또는 khcho@southbaylo.edu 로 문의 할 수 있습니다.

참여에 동의하든 안하든이 양식의 사본을 받게됩니다.

동의서 :

본인은 상기 정보를 읽었습니다. 본인은 그것에 대해 질문 할 기회를 가졌고 본인이 질문한 모든 질문에 만족할만한 답을 얻었습니다. 본인은 이 연구에 참여하는 것에 자발적으로 동의합니다.

참가자 이름 (정자체)	증인 이름 (정자체)
참가자 서명	증인 서명
날짜 : 일 / 월 / 년	날짜 : 일 / 월 / 년

연구자 / 동의자 진술:

잠재적인 참가자에게 정보를 정확하게 설명하였습니다. 참가자에게 연구에 대한 질문을 할 수있는 기회가 주어졌으며 참가자가 질문 한 모든 질문에 대해 최선을 다해 정확하고 최선을 다해 답변했음을 확인합니다. 본인은 개인이 강제로 동의하지 않았으며 동의가 자유롭고 자발적으로 제공되었음을 확인합니다.

이 ICF 사본이 참가자에게 제공되었습니다.

_____

연구원 성명(정자체)

_____

연구원 서명

_____

날짜 : 일 / 월 / 년

Daily Food Log

	Breakfast	Lunch	Dinner	Water
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				